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No. 1-6

1963 Data Record Series
GRAND BANK and ST. PIERRE BANK
North Atlantic Ocean

Canadian Oceanographic Data Centre

Programmed by the Canadian Committee on Oceanography

GC
/
C35
1963



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CANADIAN OCEANOGRAPHIC DATA CENTRE

No. 1

1963 Data Record Series

Grand Bank and St. Pierre Bank

(C O D C Reference: 05 - 62 - 005)

Programmed by the Canadian Committee on Oceanography

FISHERIES RESEARCH BOARD OF CANADA

Grand Bank and St. Pierre Bank

Ship	INVESTIGATOR II
Local cruise designation	005
Cruise period	August 14 - August 22, 1962
Observers	A.G. Kelland C. Kean C. Robbins

Biological Station - St. John's Newfoundland

ERRATA

TO PREVIOUS PUBLICATIONS

in the

1963 DATA RECORD SERIES.

Publications No. 1 to No. 5 incl.

In EXPLANATION OF DATA RECORD HEADINGS,
"OBSERVED DATA HEADINGS".

Paragraph (6) SIGMA-T, should read:

Specific gravity anomaly as defined by (Specific gravity - 1) X 1000; when reported as 2456, it reads 24.56, and corresponds to a specific gravity of 1.02456.

"INTERPOLATED DATA HEADINGS"

Paragraph (5) SIGMA-T, Delete: "and expressed in mgm/cm^3 (e.g., 23.19)".

Paragraph (9) SPECIFIC
VOLUME

ANOMALY: Delete: last closing bracket and period, and add:
"units of 10^{-5} ml/gm".

Publication No. 2

In SECTION I p. 12 Surface salinity data
accuracy in ‰, not %.

Publication No. 3

In SECTION I p. 14 Surface salinity data
accuracy in ‰, not %

SECTION I

Description of data collection procedures

"INVESTIGATOR II"



Fisheries Research Board



INTRODUCTION:

Oceanographic stations were occupied in an area from St. John's to the S. E. Grand Bank and westward to St. Pierre Bank (see track chart) to obtain B. T. , temperature and salinity data.

EXTRACT OF CRUISE LOG:

Departed from St. John's on August 14; arrived St. John's August 22. Fair weather was encountered except for strong N.W. winds and heavy seas which prevented us occupying station No. 8 (see track chart).

OBSERVATION PROCEDURES:

At each station water samples were taken from surface to bottom (or greatest depth to 1000 meters) using one or more casts at standard depth intervals. Nansen type water bottles were used with two protected reversing thermometers attached, and in addition unprotected thermometers were used at different depth intervals below 100 meters. All thermometers were read by two observers and for doubtful temperatures, check observations were made using different thermometers.

LABORATORY PROCEDURES:

Temperature and depth corrections were applied, and salinity results were obtained by titrations using silver nitrate as a standard solution.

BATHYTHERMOGRAPH DATA:

These may be obtained from the Bedford Institute of Oceanography Dartmouth, N.S. Refer to; B. T. Cruise No. Inv. - 37.

PERSONNEL:

- | | | |
|--|---|---|
| 1. A.G. Kelland (Technician-in-Charge) |) | |
| G. Kean |) | sea observers |
| C. Robbins |) | |
| | | |
| 2. A.G. Kelland |) | |
| G. Kean |) | Technicians engaged in laboratory work. |

SECTION II

Description of the machine-generated data record

INTRODUCTION (Section II)

The following section is devoted to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms are transferred to punch cards for subsequent electronic data processing.

The data are processed on an IBM 1620 computer using the OCEANS II program (Sauer, C.D. and Fofonoff, N.P., 1963).

Besides computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and interpolation at Standard Oceanographic Depths.

After the data have been processed, the data-record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous duplimat masters. The duplimat masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a Standard Deviation (σ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "General Information" of Section II of the Data Record.

The measurement error estimate of a specific observation is stated as a multiple of the standard deviation derived as above and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, i.e., $1\sigma = A$, $2\sigma = B$, etc. (In the data record 1σ (A) is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray. A parabola is fitted through 3 values of a given variable (T, S, O₂) considered as a function of depth. The two interpolation parabolas require a total of 4 points (observed depths). The middle points are common to both parabolas. The average of the 2 values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement under normal routine field conditions (σ) by:

$$\frac{\sigma_i}{\sigma} = \left\{ \frac{(\Delta V_i)^2}{\sigma^2} + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left(\frac{\sigma_n}{\sigma} \right)^2 \right\}^{\frac{1}{2}}, \text{ where}$$

σ_i = Standard deviation of the combined error estimates at standard oceanographic depth,

$$\Delta V_i = \frac{1}{3} (V_{i,1} - V_{i,2}),$$

the interpolation error estimate of variable "V" at standard oceanographic depth.

γ = Interpolation polynomial coefficient.

Z_j = Observed depth.

Z_i = Standard oceanographic depth, such that: $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of this fraction $\frac{\sigma_i}{\sigma}$ is reported in the Data Record, e.g.: 2 = B, 3 = C, etc.

With respect to the interpolated value of the Salinity variable if reported to three decimal digits, the "interpolation error estimate" is given only when $\frac{\sigma_i}{\sigma} \geq 2$. If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

GENERAL INFORMATION

Institute: Biological Station, St. John's Newfoundland.

Observation Platform: Investigator II.

Vessel's Cruising Speed: 9 knots.

Total Number of Stations Occupied: 47

Water transparency was obtained using a Secchi Disc.

Barometric pressure was obtained using an Aneroid Barometer. Readings were corrected prior to recording.

Air Temperature was observed from a Sling Psychrometer.

Wet Bulb Temperature was observed from a Sling Psychrometer.

Surface Sea Water Temperature was obtained with a deck thermometer from a bucket sample.

The following Standard deviations were used to express both the measurement and interpolation error estimates:

Temperature 0.09

Salinity 0.08

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE
NUMBER:

Assigned by the Institute. Starts off with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE
NUMBER:

Indicates the chronological order in which the stations were observed.

(3) LATITUDE:

Latitude and longitude give the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE:

Designates the geographic area code (see marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR:

The time (Greenwich Mean Time) at which the environmental surface observations were made.

It is reported to tenths of hours.

If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH

The sounding: The measured distance (by any method) from surface to bottom, corrected and reported in meters.

- (11) MAXIMUM
SAMPLING DEPTH: A code to indicate the deepest sampling depth.
00 m - 50 m = 00
51 m - 150 m = 01
151 m - 250 m = 02
etc.
- (12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).
- (13) WATER COLOUR: A code based on the percentage of yellow (see table 2).
- (14) WATER
TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage; the General Information Chapter in Section II of the data record will state which method was used.
- (15) WAVES 1
($D_w D_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (16) WAVES 2
($D_w D_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system.
(See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:- wind variable or direction unknown.
- (18) WIND FORCE
(WND-FCE): Beaufort Notation (See Table 6).
- WIND SPEED
(WND-SPD): Anemometer reading in metres per second.
- (19) BAROMETER: The barometric pressure expressed in millibars: the General Information Chapter in Section II of the data record will state the type of instrument, and whether corrections have been applied.
- (20) AIR TEMPERATURE: To 1/10 of a degree Centigrade.

- (21) WET BULB: To 1/10 of a degree Centigrade.
- (22) WW CODE: Present Weather Code (See Table 7).
Ref: WMO Code 4677.
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8).
Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9).
Ref: WMO Code 2700.
- (25) VISIBILITY: Visibility at the surface (See Table 10).
Ref: WMO Code 4300.
- (26) STATION: A strictly local station reference number, usually assigned prior to carrying out a cruise.
- (27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

OBSERVED DATA HEADINGS

(1) GMT (2) DEPTH (3) TEMP (4) SAL (5) OXYGEN (6) SGMT (7) SOUND (8) PO ₄ (9) -P- (10) NO ₂ (11) NO ₃ (12) SiO ₃ (13) pH.
--

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical observations were collected during the cruise.

- (1) G. M. T. The Greenwich Mean Time of in-situ thermometer inversion and sea water sample collection.

When a multiple cast was initiated before and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement:
"MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

- (2) DEPTH: The depth in meters is computed from the meter wheel reading, the wire angle, and the corrected unprotected thermometer reading at the moment the oceanographic bottle reversed.
- Alphabetical characters "B" to "I", (if present), immediately to the right of this column, are measurement error estimates (see: "Introduction" to Section II of the data record).
- (3) TEMPERATURE: In-situ temperatures from deepsea reversing thermometers graduated in 0.1°C . intervals, and read to 0.01°C . Surface temperature collection procedures as indicated in the chapter "Observation Procedures" of Section I, and/or under "General Information" of Section II.
- An alphabetical character following the value is the measurement error estimate as referred to under (2).
- (4) SALINITY: Salinity as defined by:
 $S = 0.03 + 1.805 \text{ Cl } \%$
- a. 1/100 parts per 1000, or
b. 1/1000 parts per 1000.
- In case a: an alphabetical character following the value is the measurement error estimate as referred to under (2).
- In case b: no error estimate indication is provided for, but the additional decimal digit takes its place.
- (5) OXYGEN: The concentration of dissolved oxygen as expressed in millilitres per litre to 2 decimal places.
- An alphabetical character following the value is the measurement error estimate as referred to under (2).
- (6) SIGMA-T: The density as defined by $\sigma_t = (\text{Specific gravity} - 1) \times 1000$, and expressed in milligrams per cm^3 i. e., Sigma-T reported as 2456 reads 24.56 milligrams/ cm^3 and corresponds to a specific gravity of 1.02456

- (7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula, expressed in terms of temperature, salinity and total pressure.
- (8) PO_4 Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre
- (9) -P- Total Phosphorus reported to hundredths of microgram-atoms per litre
- (10) NO_2 Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre -No dissolved nitrogen included-
- (11) NO_3 Nitrate-Nitrogen reported to tenths of microgram-atoms per litre
- (12) SiO_3 Silicate-Silicon reported in whole microgram-atoms per litre
- (13) pH The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

INTERPOLATED DATA HEADINGS

(1) DEPTH (2) TEMP (3) SAL (4) OXYGEN (5) SGMT (6) SOUND (7) DELTA-D (8) POT-EN (9) SV A.
--

- (1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

(2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(3) SALINITY

A. The reported salinity values are observed to three decimal places.

- (i) the interpolation error estimate is less than twice the standard deviation of measurement

-the interpolated value is reported to three decimal places (e.g., 30.139).

- (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.

-the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e.g., 29.23C).

B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.

-the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e.g., 30.59B).

(4) OXYGEN: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(5) SIGMA-T: Computed from Temperature and Salinity values at standard oceanographic depth, and expressed in mgms/cm³ (e.g., 23.19).

(6) SOUND VELOCITY: Computed from temperature and salinity values at standard oceanographic depth, and expressed in tenths of metres per second (e.g., 1462.3 m/sec).

(7) DELTA-D: The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P [\alpha(T, S, P) - \alpha_{35, 0, P}] dP$$

ΔD is expressed in dynamic metres (10^5 ergs/gram) and recorded to three decimal places (e. g., 2.345 dyn. metres).

(8) POTENTIAL
ENERGY
ANOMALY:

The Potential energy anomaly χ as defined by:

$$\chi = 1/g \int_0^P \rho \delta dP = \int_0^Z \rho \delta dz$$

χ is expressed in units of 10^8 ergs/cm² and recorded to two decimal places (e. g., 116.44).

(9) SPECIFIC
VOLUME
ANOMALY:

The specific volume anomaly as defined by;

$$\delta = \alpha - \alpha_{35, 0, P}$$

δ is conventionally reported as $10^5 \delta$, and recorded to one decimal place (e. g., 0.001234 is recorded as 123.4).

SPECIAL CHARACTERS

† (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side refers to the appropriate level.

* (Asterisk) : to the left of the "Interpolated Data" marks standard depth levels according to the following specifications:

If three or more standard depth levels fall within an observed depth interval, the third and all consequent levels within that interval are preceded by an asterisk to indicate that more than two interpolations were carried out utilizing the same set of interpolation parabolas.

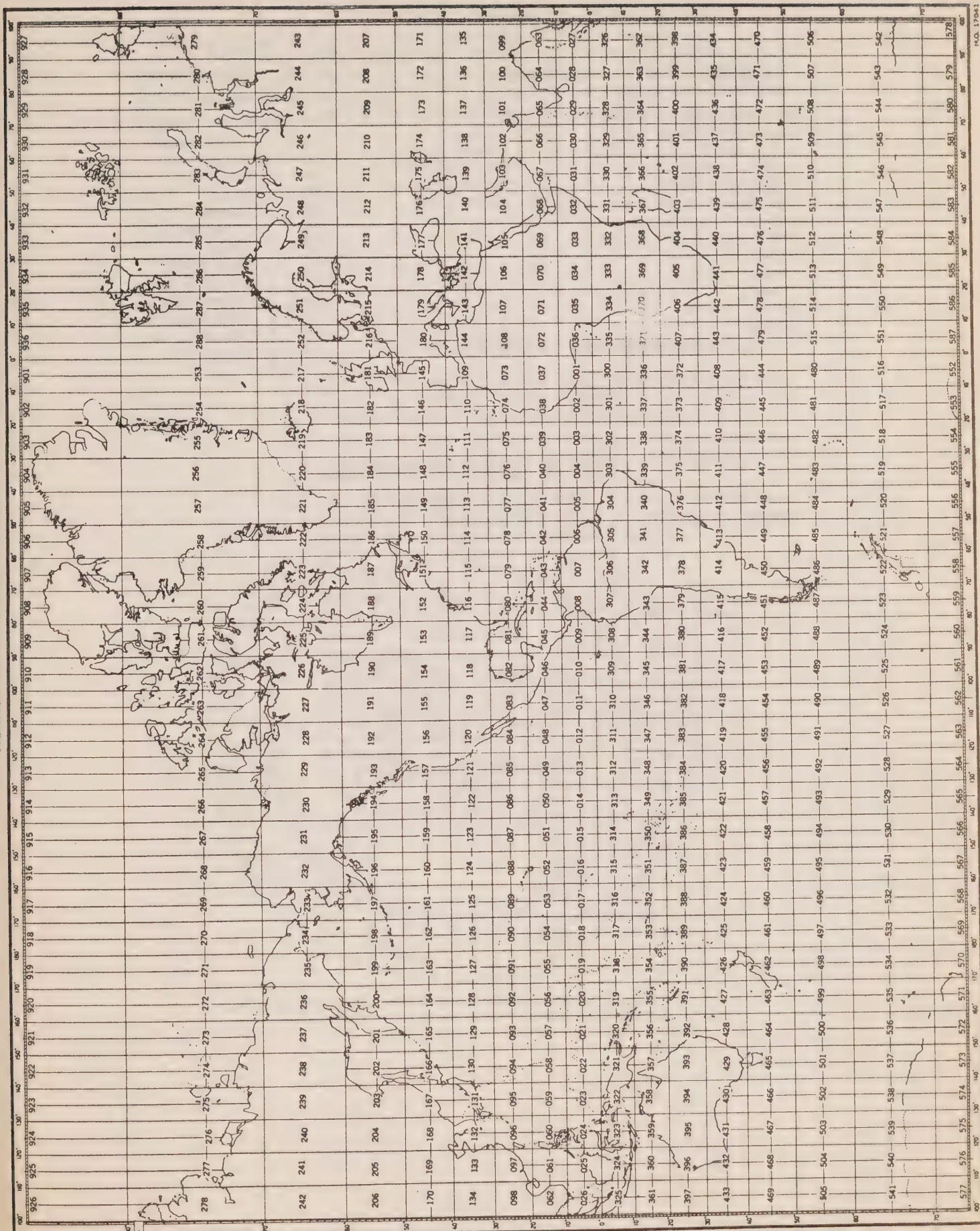


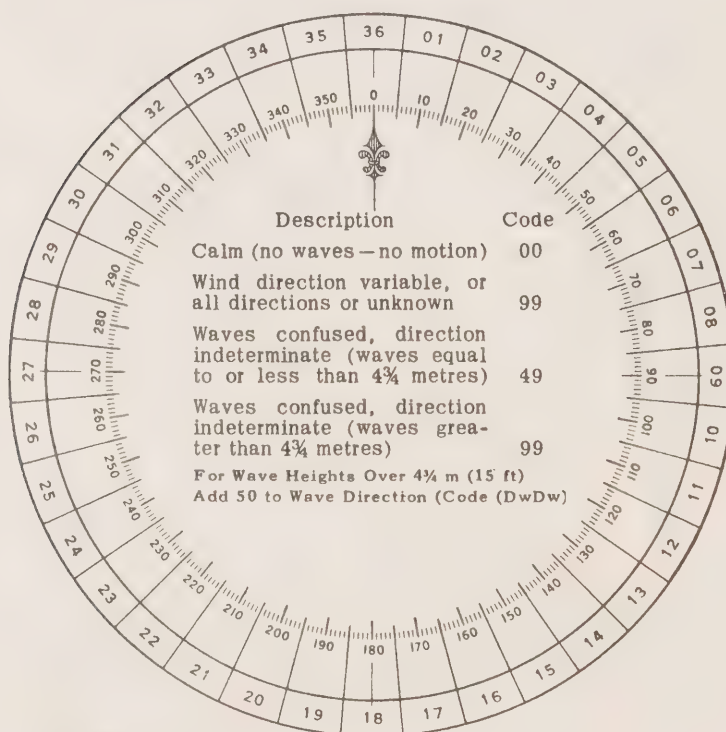
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (Pw)
(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (Hw)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than $\frac{1}{4}$ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	$\frac{1}{2}$ m ($1\frac{1}{2}$ ft)		1 $5\frac{1}{2}$ m (17 $\frac{1}{2}$ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	$1\frac{1}{2}$ m (5 ft)		3 $6\frac{1}{2}$ m (21 ft)
4	2 m ($6\frac{1}{2}$ ft)		4 7 m (22 $\frac{1}{2}$ ft)
5	$2\frac{1}{2}$ m (8 ft)		5 $7\frac{1}{2}$ m (24 ft)
6	3 m ($9\frac{1}{2}$ ft)		6 8 m (25 $\frac{1}{2}$ ft)
7	$3\frac{1}{2}$ m (11 ft)		7 $8\frac{1}{2}$ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	$4\frac{1}{2}$ m (14 ft)		9 $9\frac{1}{2}$ m (30 $\frac{1}{2}$ ft) or more
x	Height not determined		

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests,	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure ww			
No meteors except photometeors	00	Cloud development not observed or not observable	characteristic change of the state of sky during the past hour
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
Haze, dust, sand or smoke	03	Clouds generally forming or developing	
	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes	
	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	
	11	Patches of	shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
	12	More of less continuous	
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precepitation at the time of observation	
	18	Squalls	at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel clouds	
ww = 20 - 29			
	20	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	not falling as shower(s)
	21	Drizzle (not freezing) or snow grains	
	22	Rain (not freezing)	
	23	Snow	
	24	Rain and snow or ice pellets, type (a)	
	25	Freezing drizzle or freezing rain	
	26	Shower(s) of rain	
	27	Shower(s) of snow, or of rain and snow	
	28	Shower(s) of hail, or of rain and hail	
	29	Fog or ice fog	
	30	Thunderstorm (with or without precipitation)	
ww = 30 - 39			
	30	Duststorm, sandstorm, drifting or blowing snow	
	31	Slight or moderate duststorm or sandstorm	- has decreased during the preceding hour
	32		
	33		- no appreciable change during the preceding hour
	34		
	35		- has begun or has increased during the preceding hour
	36		
	37		- has decreased during the preceding hour
	38		
	39		- no appreciable change during the preceding hour
	40		
	41		- has begun or has increased during the preceding hour
	42		
	43		generally low (below eye level)
	44		
	45		generally high (above eye level)
	46		
	47		generally low (below eye level)
	48		
	49		generally high (above eye level)
	50		
ww = 40 - 49			
	40	Fog or ice fog at the time of observation	
	41	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
	42	Fog or ice fog in patches	
	43	Fog or ice fog, sky visible	has become thinner during the preceding hour
	44	Fog or ice fog, sky invisible	
	45	Fog or ice fog, sky visible	no appreciable change during the preceding hour
	46	Fog or ice fog, sky invisible	
	47	Fog or ice fog, sky visible	has begun or has become thicker during the preceding hour
	48	Fog or ice fog, sky invisible	
	49	Fog, depositing rime, sky visible	
	50	Fog, depositing rime, sky invisible	

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

50	Drizzle, not freezing, intermittent	} slight at time of observation
51	Drizzle, not freezing, continuous	
52	Drizzle, not freezing, intermittent	} moderate at time of observation
53	Drizzle, not freezing, continuous	
54	Drizzle, not freezing, intermittent	} heavy (dense) at time of observation
55	Drizzle, not freezing, continuous	
56	Drizzle, freezing, slight	
57	Drizzle, freezing, moderate or heavy (dense)	
58	Drizzle and rain, slight	
59	Drizzle and rain, moderate or heavy	

ww = 60 - 69 Rain

60	Rain, not freezing, intermittent	} slight at time of observation
61	Rain, not freezing, continuous	
62	Rain, not freezing, intermittent	} moderate at time of observation
63	Rain, not freezing, continuous	
64	Rain, not freezing, intermittent	} heavy at time of observation
65	Rain, not freezing, continuous	
66	Rain, freezing, slight	
67	Rain, freezing, moderate or heavy	
68	Rain or drizzle and snow, slight	
69	Rain or drizzle and snow, moderate or heavy	

70 - 79 Solid precipitation not in showers

ww		
70	Intermittent fall of snow flakes	} slight at time of observation
71	Continuous fall of snow flakes	
72	Intermittent fall of snow flakes	} moderate at time of observation
73	Continuous fall of snow flakes	
74	Intermittent fall of snow flakes	} heavy at time of observation
75	Continuous fall of snow flakes	
76	Ice prisms (with or without fog)	
77	Snow grains (with or without fog)	
78	Isolated starlike snow crystals (with or without fog)	
79	Ice pellets, type (a)	

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

80	Rain shower(s), slight	
81	Rain shower(s), moderate or heavy	
82	Rain shower(s), violent	
83	Shower(s) of rain and snow mixed, slight	
84	Shower(s) of rain and snow mixed, moderate or heavy	
85	Snow shower(s), slight	
86	Snow shower(s), moderate or heavy	
87	Shower(s) of snow pellets or ice pellets, type (b), with or without rain or rain and snow mixed	} - slight
88	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	
89	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	} - moderate or heavy
90	Slight rain at time of observation	
91	Moderate or heavy rain at time of observation	} thunderstorm during the preceding hour but not at time of observation
92	Slight snow, or rain and snow mixed or hail at time of observation	
93	Moderate or heavy snow, or rain and snow mixed or hail at time of observation	} thunderstorm at time of observation
94	Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation	
95	Thunderstorm, slight or moderate, with hail at time of observation	} thunderstorm at time of observation
96	Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation	
97	Thunderstorm, combined with duststorm or sandstorm at time of observation	} thunderstorm at time of observation
98	Thunderstorm, heavy, with hail at time of observation	
99	Thunderstorm, heavy, with hail at time of observation	

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, dust storm, sand storm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
0	Less than 50 metres (less than 55 yards)
1	50-200 metres (approx. 55-220 yards)
2	200-500 metres (approx. 220-550 yards)
3	500-1,000 metres (approx. 550 yards- $\frac{1}{2}$ n.m.)
4	1-2 km (approx. $\frac{1}{2}$ -1 n.m.)
5	2-4 km (approx. 1-2 n.m.)
6	4-10 km (approx. 2-6 n.m.)
7	10-20 km (approx. 6-12 n.m.)
8	20-50 km (approx. 12-30 n.m.)
9	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

SECTION III

Serial oceanographic data

C-REF-NO 005 YR 1962 DEPTH 176 WAVES 1 AIR T 18.3 VIS
 CDNS. NO 001 MONTH 8 MXSAMPD 02 WAVES 2 WET B STN 27
 LAT 47-328N DAY 14 NO.DPTH 9 WND-DIR 180 WW-CODE 01
 LON 52-352W HR 14.5 W-COLOR WND-FCE 01 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1018.6 CLD-AMT 4 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
145	0000	128	3129		2358	14956
145	0010	1212	3138		2378	14935
145	0020	0358	3218		2561	14616
145	0030	0066	3250		2608	14493
145	0050	-0056	3281		2639	14445
145	0075	-0134	3295		2652	14414
145	0100	-0139	3303		2659	14417
145	0150	-0114	3317		2670	14439
145	0174	-0084	3330		2679	14459

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1280	3129		2358	14956	0000	00000	4316
0010	1212	3138		2378	14935	0042	00002	4129
0020	0358	3218		2561	14616	0075	00007	2388
0030	0066	3250		2608	14493	0097	00012	1939
0050	-0056	3281		2639	14445	0133	00027	1647
0075	-0134	3295		2652	14414	0173	00052	1512
0100	-0139	3303		2659	14417	0210	00085	1448
0125	-0133	3309		2664	14425	0246	00127	1402
0150	-0114	3317		2670	14439	0281	00175	1345
0175	-0083	3331		2680	14460	0313	00230	1252

C-REF-NO 005	YR 1962	DEPTH 145	WAVES 1	AIR T 13.8	VIS
CONS. NO 002	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 28
LAT 47-000N	DAY 14	NO.DPTH 8	WND-DIR 220	WW-CODE 03	
LON 52-020W	HR 19.9	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1018.6	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
199	0000	125	3151		2381	14948
199	0010	1223	3151		2386	14940
199	0020	0339	3238		2579	14611
199	0030	-0029	3257		2618	14451
199	0050	-0066	3286		2643	14441
199	0075	-0142	3306		2662	14412
199	0100	-0105	3346		2693	14439
199	0142	-0080	3360		2703	14460

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1250	3151		2381	14948	0000	00000	4099
0010	1223	3151		2386	14940	0041	00002	4053
0020	0339	3238		2579	14611	0072	00006	2221
0030	-0029	3257		2618	14451	0093	00012	1842
0050	-0066	3286		2643	14441	0128	00026	1605
0075	-0142	3306		2662	14412	0166	00050	1426
0100	-0105	3346		2693	14439	0198	00078	1129
0125	-0114 B	3352		2698	14440	0226	00110	1077

C-REF-NO 005 YR 1962 DEPTH 91 WAVES 1 AIR T 14.4 VIS
 CONS. NO 003 MONTH 8 MXSAMPD 01 WAVES 2 WET B STN 29
 LAT 46-250N DAY 15 NO.DPTH 7 WND-DIR 220 WW-CODE 51
 LON 51-280W HR 01.5 W-COLOR WND-FCE 02 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1018.6 CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
015	0000	131	3230		2431	14978
015	0010	1313	3232		2432	14981
015	0020	1270	3254		2457	14971
015	0030	0740	3281		2566	14782
015	0050	0289	3306		2637	14603
015	0075	0150				
015	0088	0129	3310		2652	14540

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1310	3230		2431	14978	0000	00000	3628
0010	1313	3232		2432	14981	0036	00002	3621
0020	1270	3254		2457	14971	0072	00007	3382
0030	0740	3281		2566	14782	0100	00014	2340
0050	0289	3306		2637	14603	0141	00030	1666
0075	0150	3319		2658	14548	0180	00055	1462

C-REF-NO 005	YR 1962	DEPTH 78	WAVES 1	AIR T 15.5	VIS
CONS. NO 004	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 30
LAT 45-440N	DAY 15	NO.DPTH 6	WND-DIR 220	WW-CODE 51	
LON 50-480W	HR 09.2	W-CCLGR	WND-FCE 05	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1015.2	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
092	0000	137	3257		2439	15002
092	0010	1354	3257		2443	14998
092	0020	1288	3263		2460	14978
092	0030	0827	3284		2556	14816
092	0050	0151	3310		2651	14543
092	0075	0087	3312		2657	14519

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1370	3257		2439	15002	0000	00000	3544
0010	1354	3257		2443	14998	0035	00002	3515
0020	1288	3263		2460	14978	0070	00007	3349
0030	0827	3284		2556	14816	0099	00014	2437
0050	0151	3310		2651	14543	0139	00030	1533
0075	0087	3312		2657	14519	0177	00054	1479

C-REF-NO 005	YR 1962	DEPTH 57	WAVES 1	AIR T 16.1	VIS
CONS. NO 005	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 31
LAT 45-040N	DAY 15	NO.DPTH 5	WND-DIR 220	WW-CODE 45	
LON 50-100W	HR 15.3	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1015.2	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
153	0000	1435	3256		2426	15021
153	0010	1394	3257		2435	15011
153	0020	1321	3266		2456	14990
153	0030	0493	3310		2620	14687
153	0054	0306	3313		2641	14612

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1435	3256		2426	15021	0000	00000	3669
0010	1394	3257		2435	15011	0036	00002	3593
0020	1321	3266		2456	14990	0072	00007	3389
0030	0493	3310		2620	14687	0098	00014	1828
0050	0378 H	3312		2633	14642	0133	00028	1703

C-REF-NO 005	YR 1962	DEPTH 46	WAVES 1	AIR T 16.3	VIS
CONS. NO 006	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 32
LAT 44-198N	DAY 15	NO.DPTH 5	WND-DIR 220	WW-CODE 45	
LON 49-292W	HR 21.5	W-COLOR	WND-FCE 03	CLD-TPE	
MARSD SQ 149		W-TRNSP	BARO 1015.9	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
215	0000	147	3248		2412	15033
215	0010	1457	3248		2414	15031
215	0020	0809	3265		2544	14805
215	0030	0102	3303		2648	14517
215	0044	0093	3310		2655	14516

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	1470	3248		2412	15033	0000	00000	3808
0010	1457	3248		2414	15031	0038	00002	3784
0020	0809	3265		2544	14805	0070	00007	2552
0030	0102	3303		2648	14517	0091	00012	1556

C-REF-NO 005	YR 1962	DEPTH 275	WAVES 1	AIR T 14.4	VIS
CONS. NO 007	MONTH 8	MXSAMPD 03	WAVES 2	WET B	STN 33
LAT 43-540N	DAY 16	NO.DPTH 11	WND-DIR 250	WW-CODE 44	
LON 49-060W	HR 01.5	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 149		W-TRNSP	BARO 1016.5	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
015	0000	116	3194		2431	14922
015	0010	1123	3196		2439	14911
015	0020	0846	3248		2525	14817
015	0030	-0064	3303		2657	14441
015	0050	-0080	3328		2677	14440
015	0075	-0029	3358		2700	14472
015	0100	-0028	3364		2704	14478
015	0150	-0001	3369		2707	14499
015	0195	0022	3375		2711	14518
015	0245	0048	3386		2718	14539
015	0270	0086	3396		2724	14562

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1160	3194		2431	14922	0000	00000	3623
0010	1123	3196		2439	14911	0036	00002	3547
0020	0846	3248		2525	14817	0068	00006	2731
0030	-0064	3303		2657	14441	0089	00012	1476
0050	-0080	3328		2677	14440	0117	00023	1278
0075	-0029	3358		2700	14472	0146	00041	1068
0100	-0028	3364		2704	14478	0172	00065	1022
0125	-0016	3367		2706	14488	0198	00094	1004
0150	-0001	3369		2707	14499	0223	00130	0996
0175	0012	3372		2709	14509	0248	00172	0979
0200	0023	3376		2711	14519	0272	00218	0957
0225	0034	3381		2715	14529	0296	00270	0925
0250	0060	3388		2720	14546	0319	00326	0882

C-REF-NO 005	YR 1962	DEPTH		WAVES 1	AIR T 14.1	VIS
CONS. NO 008	MONTH 8	MXSAMPD	05	WAVES 2	WET B	STN 33A
LAT 43-520N	DAY 16	NO.DPTH	13	WND-DIR 220	WW-CODE 47	
LON 48-550W	HR 02.8	W-COLOR		WND-FCE 01	CLD-TPE	
MARSD SQ 149		W-TRNSP		BARO 1015.9	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
028	0000	124	3195		2417	14950
028	0010	1242	3196		2417	14953
028	0020	0973	3252		2508	14865
028	0030	0804	3275		2552	14806
028	0050	0255	3342		2669	14593
028	0075	0014	3355		2695	14492
028	0100	-0008	3368		2707	14487
028	0150	0145	3414		2735	14571
028	0200	0201	3433		2746	14607
028	0250	0247	3449		2755	14637
028	0300	0289	3456		2757	14665
028	0400	0323	3468		2763	14698
028	0498	0353	3478		2768	14728

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1240	3195		2417	14950	0000	00000	3757
0010	1242	3196		2417	14953	0038	00002	3755
0020	0973	3252		2508	14865	0071	00007	2891
0030	0804	3275		2552	14806	0098	00014	2472
0050	0255	3342		2669	14593	0137	00028	1367
0075	0014	3355		2695	14492	0168	00048	1112
0100	-0008	3368		2707	14487	0195	00072	1001
0125	0058 B	3391		2722	14525	0218	00099	0861
0150	0145	3414		2735	14571	0238	00127	0743
0175	0180	3425		2741	14592	0256	00157	0683
0200	0201	3433		2746	14607	0273	00189	0643
0225	0225	3442		2751	14623	0289	00223	0597
0250	0247	3449		2755	14637	0303	00259	0563
0300	0289	3456		2757	14665	0331	00338	0551
0400	0323	3468		2763	14698	0384	00528	0501
0500	0353	3478		2768	14728	0433	00752	0463

C-REF-NO 005	YR 1962	DEPTH		WAVES 1	AIR T 13.8	VIS
CONS. NO 009	MONTH 8	MXSAMPD	05	WAVES 2	WET B	STN 33B
LAT 43-500N	DAY 16	NO.DPTH	13	WND-DIR 220	WW-CODE 51	
LON 48-480W	HR 04.6	W-COLOR		WND-FCE 02	CLD-TPE	
MARSD SQ 149		W-TRNSP		BARO 1015.9	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
046	0000	126	3191		2410	14957
046	0010	1250				
046	0020	0850				
046	0030	0500				
046	0050	0100				
046	0075	0080				
046	0100	0190				
046	0150	0230				
046	0200	0440	3474		2756	14715
046	0250	0460	3487		2764	14733
046	0300	0449	3490		2768	14737
046	0400	0441	3490		2768	14750
046	0500	0420	3494		2774	14759

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1260	3191		2410	14957	0000	00000	3822
0010	1250	3213		2429	14957	0038	00002	3648
0020	0850	3233		2513	14817	0070	00007	2847
0030	0500	3253		2574	14682	0096	00013	2263
0050	0100	3290		2638	14518	0135	00029	1651
0075	0080	3333		2674	14518	0173	00052	1317
0100	0190	3370		2696	14577	0203	00079	1107
0125	0214 B	3402		2720	14596	0228	00108	0882
0150	0230	3430		2741	14611	0248	00135	0689
0175	0336 B	3452		2749	14664	0265	00163	0615
0200	0440	3474		2756	14715	0279	00191	0559
0225	0464	3483		2760	14730	0293	00221	0524
0250	0460	3487		2764	14733	0306	00252	0489
0300	0449	3490		2768	14737	0330	00319	0460
0400	0441	3490		2768	14750	0376	00487	0462
0500	0420	3494		2774	14759	0421	00691	0418

C-REF-NO 005	YR 1962	DEPTH		WAVES 1		AIR T 13.8	VIS
CONS. NO 010	MONTH 8	MXSAMPD	05	WAVES 2		WET B	STN 33D
LAT 43-470N	DAY 16	NO.DPTH	13	WND-DIR	220	WW-CODE 51	
LON 48-310W	HR 06.1	W-COLOR		WND-FCE	02	CLD-TPE	
MARSD SQ 149		W-TRNSP		BARO	1015.9	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
061	0000	131	3194		2403	14974
061	0010	1314	3198		2405	14977
061	0020	1323	3310		2490	14996
061	0030	0649	3335		2621	14754
061	0050	0273	3364		2685	14604
061	0075	0171	3398		2720	14568
061	0100	0240	3420		2732	14606
061	0150	0283	3447		2750	14636
061	0200	0347	3465		2758	14674
061	0250	0468	3488		2764	14737
061	0300	0477	3492		2766	14749
061	0400	0450	3496		2772	14755
061	0500	0433	3496		2774	14764

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1310	3194		2403	14974	0000	00000	3893
0010	1314	3198		2405	14977	0039	00002	3873
0020	1323	3310		2490	14996	0074	00007	3069
0030	0649	3335		2621	14754	0099	00013	1821
0050	0273	3364		2685	14604	0129	00025	1215
0075	0171	3398		2720	14568	0155	00041	0880
0100	0240	3420		2732	14606	0176	00060	0768
0125	0268	3436		2742	14624	0194	00081	0676
0150	0283	3447		2750	14636	0211	00103	0603
0175	0310	3456		2755	14653	0225	00128	0560
0200	0347	3465		2758	14674	0239	00154	0531
0225	0411	3477		2762	14707	0252	00183	0505
0250	0468	3488		2764	14736	0265	00213	0490
0300	0477	3492		2766	14749	0289	00282	0477
0400	0450	3496		2772	14755	0335	00445	0427
0500	0433	3496		2774	14764	0377	00643	0418

C-REF-NO 005	YR 1962	DEPTH	WAVES 1	AIR T 14.9	VIS
CONS. NO 011	MONTH 8	MXSAMPD 10	WAVES 2	WET B	STN 33F
LAT 43-430N	DAY 16	NO.DPTH 16	WND-DIR 250	WW-CODE 42	
LON 48-120W	HR 08.5	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 149		W-TRNSP	BARO 1015.9	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
085	0000	148	3243		2406	15036
085	0010	1503	3243		2401	15045
085	0020	1151	3268		2490	14932
085	0030	0553	3344		2640	14716
085	0050	0347	3371		2684	14637
085	0075	0205	3418		2733	14586
085	0100	0237	3420		2732	14604
085	0142	0308	3445		2746	14645
085	0192	0438	3479		2760	14713
085	0242	0457	3485		2763	14730
085	0292	0453	3488		2766	14737
085	0390	0411	3488		2770	14736
085	0500	0426	3494		2773	14761
085	0590	0417	3494		2774	14772
085	0794	0393	3494		2777	14796
085	0993	0372	3492		2777	14820

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1480	3243		2406	15036	0000	00000	3865
0010	1503	3243		2401	15045	0039	00002	3914
0020	1151	3268		2490	14932	0074	00007	3066
0030	0553	3344		2640	14716	0098	00013	1639
0050	0347	3371		2684	14637	0127	00024	1226
0075	0205	3418		2733	14586	0152	00040	0754
0100	0237	3420		2732	14604	0171	00057	0765
0125	0276	3433		2739	14627	0189	00078	0700
0150	0331	3451		2749	14657	0206	00101	0615
0175	0397	3469		2756	14692	0221	00126	0551
0200	0446	3481		2761	14718	0234	00151	0512
0225	0458	3485		2762	14728	0247	00179	0501
0250	0458	3486		2763	14732	0259	00210	0496
0300	0449	3488		2766	14737	0284	00279	0479
0400	0412	3489		2770	14738	0330	00444	0440
0500	0426	3494		2773	14761	0374	00646	0425
0600	0416	3494		2774	14773	0417	00889	0424
0700	0404	3494		2776	14785	0459	01174	0419
0800	0393	3494		2776	14797	0502	01502	0420

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0371	3492		2777	14821	0587	02294	0425

C-REF-NO 005	YR 1962	DEPTH 48	WAVES 1	AIR T 15.5	VIS
CONS. NO 012	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 32A
LAT 44-000N	DAY 16	NO.DPTH 5	WND-DIR 270	WW-CODE 01	
LON 50-000W	HR 19.3	W-COLOR	WND-FCE 04	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1016.5	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
193	0000	156	3260		2401	15064
193	0010	1555	3246		2392	15062
193	0020	1450	3248		2416	15030
193	0030	0404	3306		2626	14649
193	0045	0395	3308		2629	14648

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1560	3260		2401	15064	0000	00000	3906
0010	1555	3246		2392	15062	0040	00002	4000
0020	1450	3248		2416	15030	0079	00008	3773
0030	0404	3306		2626	14649	0107	00015	1768

C-REF-NO 005	YR 1962	DEPTH 67	WAVES 1	AIR T 15.2	VIS
CONS. NO 013	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 26
LAT 43-275N	DAY 16	NO.DPTH 6	WND-DIR 270	WW-CODE 02	
LON 50-308W	HR 23.4	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1019.3	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
234	0000	163	3254		2381	15085
234	0010	1650	3254		2377	15092
234	0020	1538	3254		2402	15059
234	0030	0641	3295		2591	14745
234	0050	0221	3313		2648	14574
234	0064	0215	3319		2653	14575

*TIME-DISTANCE CHECK FAILED

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1630	3254		2381	15085	0000	00000	4099
0010	1650	3254		2377	15092	0041	00002	4146
0020	1538	3254		2402	15059	0082	00008	3909
0030	0641	3295		2591	14745	0112	00016	2110
0050	0221	3313		2648	14574	0149	00030	1560

C-REF-NO 005	YR 1962	DEPTH 61	WAVES 1	AIR T 14.9	VIS
CONS. NO 014	MONTH 8	MXSAMPD 01	WAVES 2	WET P	STN 26A
LAT 43-100N	DAY 17	NO.DPTH 6	WND-DIR 290	WW-CODE 02	
LON 50-000W	HR 03.1	W-COLOR	WND-FCE 03	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
031	0000	161	3247		2380	15078
031	0010	1636	3247		2374	15087
031	0020	1205	3250		2466	14948
031	0030	0507	3286		2600	14689
031	0050	0081	3319		2663	14513
031	0059	0045	3319		2665	14498

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1610	3247		2380	15078	0000	00000	4107
0010	1636	3247		2374	15087	0042	00002	4166
0020	1205	3250		2466	14948	0079	00008	3293
0030	0507	3286		2600	14689	0106	00014	2023
0050	0081	3319		2663	14513	0140	00028	1422

C-REF-NO 005	YR 1962	DEPTH 220	WAVES 1	AIR T 14.1	VIS
CONS. NO 015	MONTH 8	MXSAMPD 02	WAVES 2	WET B	STN 26B
LAT 43-010N	DAY 17	NO.DPTH 10	WND-DIR 290	WW-CODE 02	
LON 49-460W	HR 04.7	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 149		W-TRNSP	BARO 1019.3	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
047	0000	154	3247		2396	15056
047	0010	1565	3247		2390	15065
047	0020	0504	3274		2590	14685
047	0030	0155	3290		2635	14539
047	0050	-0084	3315		2667	14437
047	0075	-0063	3331		2679	14453
047	0095	-0064	3331		2679	14456
047	0140	-0040	3351		2694	14477
047	0190	0038	3375		2710	14524
047	0205	0102	3387		2716	14557

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1540	3247		2396	15056	0000	00000	3959
0010	1565	3247		2390	15065	0040	00002	4014
0020	0504	3274		2590	14685	0071	00006	2109
0030	0155	3290		2635	14539	0090	00011	1688
0050	-0084	3315		2667	14437	0121	00023	1376
0075	-0063	3331		2679	14453	0154	00045	1261
0100	-0063	3333		2680	14457	0186	00073	1248
0125	-0052	3343		2688	14468	0216	00108	1173
0150	-0035	3355		2697	14481	0245	00148	1088
0175	0001	3366		2705	14504	0271	00192	1016
0200	0083	3383		2714	14547	0296	00239	0934

C-REF-NO 005 YR 1962 DEPTH WAVES 1 AIR T 13.3 VIS
 CONS. NO 016 MONTH 8 MXSAMPD 05 WAVES 2 WET B STN 260
 LAT 42-520N DAY 17 NO.DPTH 13 WND-DIR 270 WW-CODE 02
 LON 49-320W HR 07.0 W-COLOR WND-FCE 02 CLD-TPE
 MARSD SQ 149 W-TRNSP BARO 1019.6 CLD-AMT 0 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
070	0000	128	3227		2434	14968
070	0010	1290	3225		2431	14973
070	0020	0818	3232		2517	14805
070	0030	0565	3263		2575	14710
070	0050	0020	3319		2666	14485
070	0075	-0011	3356		2697	14480
070	0096	0034	3384		2717	14508
070	0140	0216	3434		2745	14604
070	0190	0291	3460		2760	14648
070	0240	0312	3467		2763	14666
070	0290	0328	3467		2762	14681
070	0390	0357	3474		2764	14711
070	0488	0380	3487		2773	14739

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1280	3227		2434	14968	0000	00000	3594
0010	1290	3225		2431	14973	0036	00002	3630
0020	0818	3232		2517	14805	0069	00007	2810
0030	0565	3263		2575	14710	0094	00013	2259
0050	0020	3319		2666	14485	0131	00027	1390
0075	-0011	3356		2697	14480	0162	00047	1092
0100	0050	3389		2721	14517	0187	00069	0869
0125	0153	3419		2738	14572	0207	00091	0710
0150	0239	3441		2749	14616	0223	00115	0609
0175	0279	3455		2757	14640	0238	00139	0541
0200	0298	3462		2761	14653	0251	00164	0503
0225	0309	3466		2763	14662	0264	00191	0487
0250	0315	3467		2763	14669	0276	00221	0488
0300	0331	3467		2762	14684	0301	00292	0506
0400	0359	3475		2765	14714	0351	00472	0488

C-REF-NO 005	YR 1962	DEPTH		WAVES 1	AIR T 13.3	VIS
CONS. NO 017	MONTH 8	MXSAMPD 10		WAVES 2	WET B	STN 26F
LAT 42-420N	DAY 17	NO.DPTH 16		WND-DIR 270	WW-CODE 02	
LON 49-150W	HR 10.4	W-COLOR		WND-FCE 01	CLD-TPE	
MARSD SQ 149		W-TRNSP		BARO 1019.9	CLD-AMT 0	HW

C B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
104	0000	131	3187		2397	14973
104	0010	1250				
104	0020	1150				
104	0030	0900				
104	0050	0291	3355		2676	14611
104	0075	0230				
104	0100	0235	3416		2729	14603
104	0150	0266	3423		2732	14626
104	0200	0379	3474		2762	14689
104	0250	0390				
104	0300	0459	3488		2765	14741
104	0400	0419	3488		2769	14741
104	0495	0391	3488		2772	14745
104	0595	0383	3488		2773	14758
104	0795	0368	3488		2775	14785
104	0990	0368	3490		2776	14818

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1310	3187		2397	14973	0000	00000	3944
0010	1250	3225		2439	14959	0038	00002	3554
0020	1150	3260		2484	14930	0071	00007	3120
0030	0900	3292		2551	14845	0099	00014	2483
0050	0291	3355		2676	14611	0137	00028	1298
0075	0230	3396		2713	14594	0166	00046	0943
0100	0235	3416		2729	14603	0188	00065	0794
0125	0244	3420		2732	14611	0207	00088	0771
0150	0266	3423		2732	14626	0227	00115	0769
0175	0324	3448		2747	14658	0244	00145	0638
0200	0379	3474		2762	14689	0259	00172	0495
0225	0387	3484		2769	14698	0270	00198	0433
0250	0390	3489		2773	14704	0281	00223	0397
0300	0459	3488		2765	14741	0303	00287	0486
0400	0419	3488		2769	14741	0351	00456	0452
0500	0390	3488		2772	14745	0395	00662	0430
0600	0383	3488		2773	14759	0439	00908	0431
0700	0374	3488		2774	14772	0482	01200	0431
0800	0370	3488		2775	14787	0526	01537	0432

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0368	3490		2776	14819	0614	02350	0434

C-REF-NO 005	YR 1962	DEPTH		WAVES 1	AIR T 14.4	VIS
CONS. NO 018	MONTH 8	MXSAMPD 10		WAVES 2	WET B	STN 26G
LAT 42-360N	DAY 17	NO.DPTH 16		WND-DIR 340	WW-CODE 02	
LON 49-025W	HR 12.0	W-COLOR		WND-FCE 02	CLD-TPE	
MARSD SQ 149		W-TRNSP		BARO 1021.3	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
120	0000	156	3234		2381	15060
120	0010	1560				
120	0020	1000				
120	0030	0428	3308		2625	14659
120	0050	-0012	3330		2676	14472
120	0075	-0062	3349		2694	14456
120	0100	0063	3391		2721	14523
120	0150	0140				
120	0200	0244	3404		2719	14622
120	0250	0270				
120	0295	0296	3454		2754	14667
120	0395	0365	3481		2769	14716
120	0495	0353	3483		2772	14728
120	0595	0367	3488		2775	14751
120	0795	0383	3492		2776	14792
120	0991	0377	3492		2777	14822

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1560	3234		2381	15060	0000	00000	4096
0010	1560	3261		2402	15065	0040	00002	3901
0020	1000	3285		2529	14880	0073	00007	2692
0030	0428	3308		2625	14659	0096	00012	1776
0050	-0012	3330		2676	14472	0127	00024	1291
0075	-0062	3349		2694	14456	0157	00044	1123
0100	0063	3391		2721	14523	0182	00066	0864
0125	0114	3404 B		2729	14552	0203	00090	0797
0150	0140	3411 B		2732	14568	0223	00118	0766
0175	0195	3411 B		2728	14597	0243	00151	0807
0200	0244	3404		2719	14622	0264	00192	0897
0225	0262	3417		2728	14635	0286	00239	0818
0250	0270	3430		2737	14645	0305	00287	0730
0300	0300	3456		2756	14670	0338	00378	0562
0400	0365	3481		2770	14717	0389	00557	0444
0500	0353	3483		2772	14729	0432	00760	0426
0600	0368	3488		2775	14752	0475	01000	0413
0700	0378	3491		2776	14774	0517	01279	0413
0800	0382	3493		2777	14792	0559	01603	0414

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0376	3492		2777	14823	0644	02398	0431

C-REF-NO 005	YR 1962	DEPTH		WAVES 1	AIR T 14.9	VIS
CONS. NO 019	MONTH 8	MXSAMPD 05		WAVES 2	WET B	STN 26H
LAT 42-290N	DAY 17	NO.DPTH 13		WND-DIR 270	WW-CODE 02	
LON 48-480W	HR 14.7	W-COLOR		WND-FCE 02	CLD-TPE	
MARSD SQ 149		W-TRNSP		BARO 1021.3	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
147	0000	194	3248		2302	15175
147	0010	1631	3277		2399	15089
147	0020	0876	3281		2546	14833
147	0030	0440	3303		2620	14664
147	0050	0215	3337		2668	14575
147	0075	0673	3440		2700	14784
147	0100	0616	3440		2708	14766
147	0150	0448	3444		2731	14706
147	0200	0545	3460		2733	14756
147	0250	0624	3485		2742	14800
147	0300	0606	3490		2749	14801
147	0400	0496	3496		2767	14774
147	0500	0507	3501		2770	14796

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1940	3248		2302	15175	0000	00000	4856
0010	1631	3277		2399	15089	0044	00002	3936
0020	0876	3281		2546	14833	0077	00007	2529
0030	0440	3303		2620	14664	0099	00012	1826
0050	0215	3337		2668	14575	0131	00025	1374
0075	0673	3440		2700	14784	0162	00044	1074
0100	0616	3440		2708	14766	0188	00068	1005
0125	0520 B	3441		2721	14731	0212	00095	0887
0150	0448	3444		2731	14706	0233	00124	0787
0175	0481 B	3451		2733	14725	0252	00157	0776
0200	0545	3460		2733	14756	0272	00195	0783
0225	0592	3473		2737	14781	0291	00237	0745
0250	0624	3485		2742	14800	0310	00282	0702
0300	0606	3490		2749	14801	0344	00378	0648
0400	0496	3496		2767	14774	0401	00578	0481
0500	0507	3501		2770	14796	0449	00800	0469

C-REF-NO 005 YR 1962 DEPTH 275 WAVES 1 AIR T 13.8 VIS
 CONS. NO 020 MONTH 8 MXSAMPD 03 WAVES 2 WET B STN 19
 LAT 42-565N DAY 17 NO.DPTH 11 WND-DIR 140 WW-CODE 03
 LON 50-168W HR 23.6 W-COLOR WND-FCE 02 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1024.0 CLD-AMT 5 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
236	0000	156	3234		2381	15060
236	0010	1534	3234		2387	15054
236	0020	0883	3243		2516	14831
236	0030	0652	3270		2569	14746
236	0050	0350	3289		2618	14627
236	0075	0143	3326		2664	14546
236	0100	0156	3364		2694	14561
236	0148	0278	3400		2713	14627
236	0196	0285	3413		2723	14640
236	0248	0315	3438		2740	14665
236	0270	0400	3456		2746	14707

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1560	3234		2381	15060	0000	00000	4096
0010	1534	3234		2387	15054	0041	00002	4044
0020	0883	3243		2516	14831	0075	00007	2821
0030	0652	3270		2569	14746	0101	00014	2310
0050	0350	3289		2618	14627	0143	00030	1847
0075	0143	3326		2664	14546	0184	00056	1407
0100	0156	3364		2694	14561	0216	00084	1128
0125	0219	3387		2708	14596	0243	00115	0999
0150	0279	3401		2713	14628	0267	00149	0949
0175	0288	3408		2719	14637	0291	00188	0902
0200	0283	3414		2724	14640	0313	00231	0852
0225	0285	3425		2732	14647	0333	00275	0778
0250	0339	3441		2740	14676	0352	00321	0710

C-REF-NO 005	YR 1962	DEPTH 275	WAVES 1	AIR T 13.3	VIS
CONS. NO 021	MONTH 8	MXSAMPD 03	WAVES 2	WET B	STN 18
LAT 43-080N	DAY 18	NO.DPTH 11	WND-DIR 180	WW-CODE 02	
LON 51-100W	HR 04.8	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1024.3	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
048	0000	159	3248		2386	15071
048	0010	1611	3248		2381	15080
048	0020	1224	3263		2473	14956
048	0030	0671	3286		2580	14756
048	0050	0099	3319		2661	14521
048	0075	0052	3340		2681	14507
048	0100	0365	3398		2703	14656
048	0150	0468	3420		2710	14711
048	0200	0562	3452		2724	14762
048	0248	0341	3434		2734	14676
048	0270	0357	3442		2739	14687

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1590	3248		2386	15071	0000	00000	4057
0010	1611	3248		2381	15080	0041	00002	4105
0020	1224	3263		2473	14956	0078	00008	3232
0030	0671	3286		2580	14756	0105	00014	2214
0050	0099	3319		2661	14521	0142	00029	1432
0075	0052	3340		2681	14507	0176	00050	1246
0100	0365	3398		2703	14656	0205	00075	1044
0125	0461 C	3416		2708	14703	0230	00105	1006
0150	0468	3420		2710	14711	0255	00141	0988
0175	0536 B	3439		2717	14746	0280	00181	0929
0200	0562	3452		2724	14762	0302	00224	0863
0225	0444 C	3443		2730	14716	0323	00270	0801
0250	0399 D	3443		2736	14701	0343	00318	0752

C-REF-NO 005 YR 1962 DEPTH 285 WAVES 1 AIR T 13.6 VIS
 CONS. NO 022 MONTH 8 MXSAMPD 03 WAVES 2 WET B STN 17
 LAT 43-365N DAY 18 NO.DPTH 11 WND-DIR 160 WW-CODE 47
 LON 51-560W HR 10.0 W-COLOR WND-FCE 03 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1023.3 CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
100	0000	160	3250		2385	15075
100	0010	1608	3250		2383	15079
100	0020	0889	3294		2555	14840
100	0030	0470	3306		2619	14677
100	0050	0051	3335		2677	14502
100	0075	-0039	3335		2681	14464
100	0100	-0028	3344		2688	14475
100	0150	0186	3395		2716	14587
100	0196	0234	3404		2720	14617
100	0247	0434	3447		2735	14716
100	0272	0494	3463		2741	14747

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1600	3250		2385	15075	0000	00000	4064
0010	1608	3250		2383	15079	0041	00002	4084
0020	0889	3294		2555	14840	0074	00007	2451
0030	0470	3306		2619	14677	0095	00012	1834
0050	0051	3335		2677	14502	0127	00024	1284
0075	-0039	3335		2681	14464	0159	00045	1240
0100	-0028	3344		2688	14475	0189	00072	1175
0125	0074 B	3369		2703	14529	0217	00104	1034
0150	0186	3395		2716	14587	0241	00138	0916
0175	0213	3400		2719	14604	0264	00176	0898
0200	0249	3407		2721	14624	0287	00220	0878
0225	0345	3427		2728	14672	0308	00266	0815
0250	0418 B	3445		2735	14710	0328	00314	0761

C-REF-NO 005	YR 1962	DEPTH 75	WAVES 1	AIR T 15.5	VIS
CONS. NO 023	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 25
LAT 43-515N	DAY 18	NO.DPTH 6	WND-DIR 180	WW-CODE 01	
LON 51-100W	HR 14.8	W-COLOR	WND-FCE 04	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1022.6	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
148	0000	156	3259		2401	15063
148	0010	1568	3259		2399	15068
148	0020	1454	3263		2427	15033
148	0030	0663	3303		2594	14755
148	0050	0220	3321		2655	14575
148	0073	0219	3328		2660	14579

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1560	3259		2401	15063	0000	00000	3913
0010	1568	3259		2399	15068	0039	00002	3933
0020	1454	3263		2427	15033	0078	00008	3671
0030	0663	3303		2594	14755	0107	00015	2077
0050	0220	3321		2655	14575	0143	00029	1498
0075	0286 B	3325		2653	14609	0181	00053	1520

C-REF-NO 005	YR 1962	DEPTH 77	WAVES 1	AIR T 15.5	VIS 96
CONS. NO 024	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 24
LAT 44-100N	DAY 18	NO.DPTH 6	WND-DIR 180	WW-CODE 03	
LON 51-410W	HR 18.1	W-COLOR	WND-FCE 05	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1019.9	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
181	0000	153	3263		2410	15054
181	0010	1525	3257		2407	15054
181	0020	1376	3263		2443	15008
181	0030	0781	3288		2566	14799
181	0050	0290	3326		2653	14606
181	0074	0233	3335		2665	14587

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1530	3263		2410	15054	0000	00000	3821
0010	1525	3257		2407	15054	0039	00002	3857
0020	1376	3263		2443	15008	0076	00008	3516
0030	0781	3288		2566	14799	0105	00015	2344
0050	0290	3326		2653	14606	0144	00030	1516
0075	0253	3335		2663	14596	0181	00053	1421

C-REF-NO 005	YR 1962	DEPTH 80	WAVES 1	AIR T 15.5	VIS
CONS. NO 025	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 23
LAT 44-245N	DAY 18	NO.DPTH 6	WND-DIR 180	WW-CODE 03	
LON 52-050W	HR 20.8	W-COLOR	WND-FCE 06	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1017.2	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
208	0000	148	3254		2414	15037
208	0010	1484	3254		2413	15040
208	0020	1348	3257		2444	14998
208	0030	0878	3279		2545	14835
208	0050	0320	3293		2624	14615
208	0077	0306				

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1480	3254		2414	15037	0000	00000	3784
0010	1484	3254		2413	15040	0038	00002	3795
0020	1348	3257		2444	14998	0075	00008	3506
0030	0878	3279		2545	14835	0105	00015	2548
0050	0320	3293		2624	14615	0149	00032	1791
0075	0276							

C-REF-NO 005 YR 1962 DEPTH 79 WAVES 1 AIR T 15.2 VIS
 CONS. NO 026 MONTH 8 MXSAMPD 01 WAVES 2 WET B STN 22
 LAT 44-380N DAY 18 NO.DPTH 6 WND-DIR 180 WW-CODE 02
 LON 52-275W HR 23.3 W-COLOR WND-FCE 05 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1014.2 CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
233	0000	146	3247		2413	15030
233	0010	1452	3247		2415	15029
233	0020	1433	3247		2419	15025
233	0030	1233	3254		2464	14960
233	0050	0298	3295		2628	14606
233	0076	0260	3308		2641	14595

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1460	3247		2413	15030	0000	00000	3795
0010	1452	3247		2415	15029	0038	00002	3781
0020	1433	3247		2419	15025	0076	00008	3748
0030	1233	3254		2464	14960	0111	00017	3316
0050	0298	3295		2628	14606	0162	00036	1757
0075	0264 B	3307		2640	14596	0205	00063	1638

C-REF-NO 005	YR 1962	DEPTH 285	WAVES 1	AIR T 16.1	VIS
CONS. NO 027	MONTH 8	MXSAMPD 03	WAVES 2	WET B	STN 16
LAT 44-115N	DAY 19	NO.DPTH 11	WND-DIR 220	WW-CODE 47	
LON 52-460W	HR 06.2	W-COLOR	WND-FCE 04	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1013.2	CLD-ANT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
062	0000	143	3247		2419	15020
062	0010	1420				
062	0020	1350				
062	0030	0800				
062	0050	0100				
062	0075	-0020				
062	0100	0250				
062	0150	0320				
062	0200	0410				
062	0250	0410				
062	0275	0400				

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1430	3247		2419	15020	0000	00000	3735
0010	1420							
0020	1350							
0030	0800							
0050	0100							
0075	-0020							
0100	0250							
0125	0323 C							
0150	0320							
0175	0369							
0200	0410							
0225	0417							
0250	0410							

C-REF-NO 005 YR 1962 DEPTH 285 WAVES 1 AIR T 15.5 VIS
 CONS. NO 028 MONTH 8 MXSAMPD 03 WAVES 2 WET B STN 15
 LAT 44-380N DAY 19 NO.DPTH 11 WND-DIR 270 WW-CODE 44
 LON 53-450W HR 11.5 W-COLOR WND-FCE 03 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1013.8 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
115	0000	1455	3245		2414	15027
115	0010	1458	3248		2414	15031
115	0020	1416	3247		2422	15019
115	0030	0735	3290		2574	14782
115	0050	0348	3333		2653	14632
115	0075	0387	3371		2680	14658
115	0100	0403	3393		2695	14672
115	0150	0661	3454		2713	14794
115	0198	0549	3447		2722	14756
115	0248	0529	3447		2724	14756
115	0270	0506	3461		2738	14752

#TIME-DISTANCE CHECK FAILED

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1455	3245		2414	15027	0000	00000	3789
0010	1458	3248		2414	15031	0038	00002	3786
0020	1416	3247		2422	15019	0076	00008	3712
0030	0735	3290		2574	14782	0106	00015	2267
0050	0348	3333		2653	14632	0144	00030	1514
0075	0387	3371		2680	14658	0179	00052	1266
0100	0403	3393		2695	14672	0209	00079	1118
0125	0537 C	3426		2707	14736	0236	00109	1015
0150	0661	3454		2713	14794	0261	00145	0965
0175	0619 B	3454		2719	14781	0284	00184	0916
0200	0548	3447		2722	14755	0307	00228	0887
0225	0535	3444		2721	14754	0330	00277	0895
0250	0515	3451		2729	14751	0351	00329	0820

C-REF-NO 005	YR 1962	DEPTH 81	WAVES 1	AIR T 15.2	VIS
CONS. NO 029	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 21
LAT 45-045N	DAY 19	NO.DPTH 6	WND-DIR 270	WW-CODE 01	
LON 53-120W	HR 16.3	W-COLOR	WND-FCE 03	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1014.2	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
163	0000	139	3227		2412	15005
163	0010	1383	3227		2414	15004
163	0020	1233	3230		2445	14955
163	0030	0412	3294		2616	14651
163	0050	0187	3303		2643	14558
163	0078	0086	3313		2657	14519

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1390	3227		2412	15005	0000	00000	3803
0010	1383	3227		2414	15004	0038	00002	3792
0020	1233	3230		2445	14955	0075	00007	3491
0030	0412	3294		2616	14651	0102	00014	1866
0050	0187	3303		2643	14558	0137	00028	1611
0075	-0006 E	3320		2668	14477	0174	00052	1367

C-REF-NO 005	YR 1962	DEPTH 71	WAVES 1	AIR T 13.6	VIS
CONS. NO 030	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 20
LAT 45-195N	DAY 19	NO.DPTH 6	WND-DIR 270	WW-CODE 02	
LON 53-380W	HR 19.3	W-COLOR	WND-FCE 06	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1015.2	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
193	0000	134	3209		2408	14986
193	0010	1350	3209		2406	14991
193	0020	1276	3212		2423	14968
193	0030	0591	3279		2584	14723
193	0050	0175	3303		2644	14553
193	0067	0161	3306		2647	14550

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1340	3209		2408	14986	0000	00000	3839
0010	1350	3209		2406	14991	0039	00002	3860
0020	1276	3212		2423	14968	0077	00008	3702
0030	0591	3279		2584	14723	0106	00015	2170
0050	0175	3303		2644	14553	0144	00030	1603

C-REF-NO 005 YR 1962 DEPTH 99 WAVES 1 AIR T 12.7 VIS
 CONS. NO 031 MONTH 8 MXSAMPD 01 WAVES 2 WET B STN 14
 LAT 45-110N DAY 19 NO.DPTH 7 WND-DIR 270 WW-CODE 02
 LON 54-165W HR 23.1 W-COLOR WND-FCE 04 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1018.6 CLD-AMT 0 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
231	0000	135	3220		2415	14991
231	0010	1377	3220		2409	15001
231	0020	1352	3220		2415	14995
231	0030	0982	3252		2507	14870
231	0050	0274	3299		2633	14596
231	0075	0173	3315		2653	14558
231	0096	0175	3321		2658	14563

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1350	3220		2415	14991	0000	00000	3777
0010	1377	3220		2409	15001	0038	00002	3832
0020	1352	3220		2415	14995	0076	00008	3786
0030	0982	3252		2507	14870	0110	00016	2906
0050	0274	3299		2633	14596	0157	00034	1707
0075	0173	3315		2653	14558	0197	00060	1511

C-REF-NO 005	YR 1962	DEPTH 285	WAVES 1	AIR T 13.3	VIS
CONS. NO 032	MONTH 8	MXSAMPD 03	WAVES 2	WET B	STN 13
LAT 45-062N	DAY 20	NO.DPTH 11	WND-DIR 270	WW-CODE 02	
LON 54-335W	HR 01.0	W-COLOR	WND-FCE 04	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1018.6	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
010	0000	135	3218		2413	14990
010	0010	1359	3220		2413	14995
010	0020	1326	3229		2427	14987
010	0030	0981	3274		2524	14873
010	0050	0329	3301		2630	14620
010	0075	0180	3317		2654	14561
010	0100	0247	3344		2671	14598
010	0150	0500	3422		2708	14724
010	0200	0577	3454		2724	14768
010	0250	0561	3465		2735	14772
010	0275	0538	3476		2746	14768

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1350	3218		2413	14990	0000	00000	3792
0010	1359	3220		2413	14995	0038	00002	3797
0020	1326	3229		2427	14987	0076	00008	3670
0030	0981	3274		2524	14873	0108	00016	2742
0050	0329	3301		2630	14620	0153	00033	1738
0075	0180	3317		2654	14561	0194	00059	1500
0100	0247	3344		2671	14598	0230	00091	1347
0125	0375 B	3384		2691	14663	0261	00127	1161
0150	0500	3422		2708	14724	0289	00165	1009
0175	0555	3442		2717	14754	0313	00206	0925
0200	0577	3454		2724	14768	0336	00249	0866
0225	0577	3460		2729	14773	0357	00296	0826
0250	0561	3465		2735	14771	0377	00345	0771

C-REF-NO 005 YR 1962 DEPTH 285 WAVES 1 AIR T 13.0 VIS
 CONS. NO 033 MONTH 8 MXSAMPD 03 WAVES 2 WET B STN 10
 LAT 45-020N DAY 20 NO.DPTH 11 WND-DIR 270 WW-CODE 02
 LON 55-280W HR 05.7 W-COLOR WND-FCE 02 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1021.3 CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
057	0000	134	3218		2415	14987
057	0010	1354	3218		2413	14993
057	0020	1339	3218		2416	14990
057	0030	0930	3245		2510	14850
057	0050	0287	3286		2621	14600
057	0075	0090	3303		2649	14519
057	0100	-0023	3315		2665	14473
057	0150	0223	3377		2699	14601
057	0200	0509	3442		2723	14739
057	0250	0553	3465		2736	14768
057	0270	0549	3465		2736	14770

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1340	3218		2415	14987	0000	00000	3773
0010	1354	3218		2413	14993	0038	00002	3802
0020	1339	3218		2416	14990	0076	00008	3776
0030	0930	3245		2510	14850	0110	00016	2878
0050	0287	3286		2621	14600	0157	00034	1816
0075	0090	3303		2649	14519	0199	00061	1549
0100	-0023	3315		2665	14473	0236	00094	1399
0125	0058 C	3343		2683	14518	0269	00132	1229
0150	0223	3377		2699	14601	0298	00173	1081
0175	0379 B	3412		2713	14676	0324	00216	0958
0200	0509	3442		2723	14739	0347	00260	0875
0225	0551	3458		2730	14762	0368	00306	0807
0250	0553	3465		2736	14768	0388	00354	0761

C-REF-NO 005	YR 1962	DEPTH 103	WAVES 1	AIR T 12.7	VIS
CONS. NO 034	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 11
LAT 45-195N	DAY 20	NO.DPTH 7	WND-DIR 270	WW-CODE 02	
LON 55-065W	HR 08.8	W-COLOR	WND-FCE 04	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1020.6	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
088	0000	132	3216		2418	14980
088	0010	1328	3216		2416	14984
088	0020	1306	3220		2424	14979
088	0030	0594	3265		2573	14722
088	0050	0147	3297		2641	14540
088	0075	-0060	3313		2665	14452
088	0100	-0060	3313		2665	14456

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1320	3216		2418	14980	0000	00000	3750
0010	1328	3216		2416	14984	0038	00002	3767
0020	1306	3220		2424	14979	0075	00008	3699
0030	0594	3265		2573	14722	0105	00015	2278
0050	0147	3297		2641	14540	0145	00030	1629
0075	-0060	3313		2665	14452	0183	00055	1399
0100	-0060	3313		2665	14456	0218	00086	1398

C-REF-NO 005	YR 1962	DEPTH 78	WAVES 1	AIR T 13.3	VIS
CONS. NO 035	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 12
LAT 45-295N	DAY 20	NO.DPTH 6	WND-DIR 270	WW-CODE 02	
LON 54-340W	HR 11.3	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1020.9	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
113	0000	1305	3220		2425	14974
113	0010	1294	3220		2426	14973
113	0020	1289	3223		2429	14974
113	0030	0746	3248		2540	14780
113	0050	-0003	3286		2640	14470
113	0075	-0034	3312		2663	14464

#TIME-DISTANCE CHECK FAILED

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1305	3220		2425	14974	0000	00000	3683
0010	1294	3220		2426	14973	0037	00002	3674
0020	1289	3223		2429	14974	0074	00008	3645
0030	0746	3248		2540	14780	0105	00015	2594
0050	-0003	3286		2640	14470	0148	00032	1631
0075	-0034	3312		2663	14464	0186	00056	1418

C-REF-NO 005 YR 1962 DEPTH 132 WAVES 1 AIR T 14.4 VIS
 CONS. NO 036 MONTH 8 MXSAMPD 01 WAVES 2 WET B STN 20A
 LAT 45-360N DAY 20 NO.DPTH 8 WND-DIR 270 WW-CODE 02
 LON 54-080W HR 13.6 W-COLOR WND-FCE 02 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1020.9 CLD-AMT 0 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
136	0000	128	3191		2406	14963
136	0010	1256	3191		2411	14957
136	0020	0755	3227		2522	14780
136	0030	0164	3256		2607	14538
136	0050	0115	3306		2650	14526
136	0075	-0107	3315		2668	14430
136	0100	-0109	3315		2668	14433
136	0129	-0090	3324		2675	14448

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1280	3191		2406	14963	0000	00000	3859
0010	1256	3191		2411	14957	0039	00002	3817
0020	0755	3227		2522	14780	0072	00007	2761
0030	0164	3256		2607	14538	0095	00013	1952
0050	0115	3306		2650	14526	0131	00027	1541
0075	-0107	3315		2668	14430	0167	00050	1367
0100	-0109	3315		2668	14433	0202	00081	1365
0125	-0107	3323		2674	14439	0235	00119	1302

C-REF-NO 005	YR 1962	DEPTH 88	WAVES 1	AIR T 13.8	VIS
CONS. NO 037	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 20B
LAT 45-540N	DAY 20	NO.DPTH 7	WND-DIR 270	WW-CODE 02	
LON 54-370W	HR 16.9	W-COLOR	WND-FCE 04	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1019.9	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
169	0000	131	3198		2406	14974
169	0010	1298	3198		2408	14972
169	0020	1272	3198		2413	14965
169	0030	1007	3203		2465	14873
169	0050	0083	3275		2627	14508
169	0075	-0064	3306		2659	14449
169	0085	-0064	3306		2659	14450

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1310	3198		2406	14974	0000	00000	3863
0010	1298	3198		2408	14972	0039	00002	3843
0020	1272	3198		2413	14965	0077	00008	3797
0030	1007	3203		2465	14873	0113	00017	3309
0050	0083	3275		2627	14508	0164	00036	1758
0075	-0064	3306		2659	14449	0204	00062	1451

C-REF-NO 005 YR 1962 DEPTH 60 WAVES 1 AIR T 13.3 VIS
 CONS. NO 038 MONTH 8 MXSAMPD 01 WAVES 2 WET B STN C7
 LAT 46-030N DAY 20 NO.DPTH 5 WND-DIR 220 WW-CODE 03
 LON 55-392W HR 22.3 W-COLOR WND-FCE 04 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1019.3 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
223	0000	131	3209		2414	14976
223	0010	1315	3210		2414	14979
223	0020	1280	3210		2421	14969
223	0030	0628	3232		2543	14732
223	0057	0241	3252		2598	14576

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1310	3209		2414	14976	0000	00000	3782
0010	1315	3210		2414	14979	0038	00002	3787
0020	1280	3210		2421	14969	0076	00008	3724
0030	0628	3232		2543	14732	0107	00016	2565
0050	0415 I	3243		2576	14648	0156	00035	2251

C-REF-NO 005	YR 1962	DEPTH 48	WAVES 1	AIR T 14.4	VIS
CONS. NO 039	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN C9
LAT 45-432N	DAY 21	NO.DPTH 5	WND-DIR 220	WW-CODE 51	
LON 56-082W	HR 01.8	W-COLOR	WND-FCE 03	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1013.5	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
018	0000	133	3207		2409	14982
018	0010	1341	3207		2407	14988
018	0020	1303	3207		2414	14976
018	0030	0583	3241		2555	14715
018	0045	0578	3245		2559	14716

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1330	3207		2409	14982	0000	00000	3835
0010	1341	3207		2407	14988	0039	00002	3858
0020	1303	3207		2414	14976	0077	00008	3789
0030	0583	3241		2555	14715	0108	00016	2445

C-REF-NO 005	YR 1962	DEPTH 48	WAVES 1	AIR T 12.7	VIS
CONS. NO 040	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 06
LAT 46-270N	DAY 21	NO.DPTH 5	WND-DIR 320	WW-CODE 01	
LON 57-015W	HR 10.2	W-COLOR	WND-FCE 04	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1009.1	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
102	0000	137	3144		2352	14988
102	0010	1379	3144		2351	14993
102	0020	1359	3144		2355	14987
102	0030	1054	3180		2439	14888
102	0045	0432	3241		2572	14655

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1370	3144		2352	14988	0000	00000	4374
0010	1379	3144		2351	14992	0044	00002	4394
0020	1359	3144		2355	14987	0088	00009	4358
0030	1054	3180		2439	14888	0128	00019	3555

C-REF-NO 005	YR 1962	DEPTH 268	WAVES 1	AIR T 13.8	VIS
CONS. NO 041	MONTH 8	MXSAMPD 03	WAVES 2	WET B	STN 01
LAT 47-030N	DAY 21	NO.DPTH 11	WND-DIR 320	WW-CODE 02	
LON 57-020W	HR 15.1	W-COLOR	WND-FCE 04	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1011.8	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
151	0000	130	3164		2382	14967
151	0010	1298	3164		2382	14968
151	0020	1263	3174		2396	14959
151	0030	0448	3221		2554	14656
151	0050	0156	3243		2597	14536
151	0075	0105	3277		2627	14522
151	0100	0097	3297		2644	14525
151	0145	0278	3353		2675	14620
151	0190	0550	3440		2716	14754
151	0244	0555	3463		2734	14768
151	0261	0552	3469		2739	14770

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1300	3164		2382	14967	0000	00000	4095
0010	1298	3164		2382	14968	0041	00002	4093
0020	1263	3174		2396	14959	0082	00008	3958
0030	0448	3221		2554	14656	0114	00016	2451
0050	0156	3243		2597	14536	0159	00034	2045
0075	0105	3277		2627	14522	0207	00064	1755
0100	0097	3297		2644	14525	0249	00102	1598
0125	0176	3325		2661	14569	0287	00146	1441
0150	0312	3363		2681	14637	0321	00194	1258
0175	0468 B	3413		2704	14714	0350	00242	1045
0200	0565	3448		2721	14763	0375	00289	0898
0225	0574 B	3460		2729	14772	0397	00336	0819
0250	0571	3469		2737	14776	0416	00384	0751

C-REF-NO 005	YR 1962	DEPTH 112	WAVES 1	AIR T 13.3	VIS
CONS. NO 042	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 02
LAT 46-435N	DAY 21	NO.DPTH 8	WND-DIR 290	WW-CODE 02	
LON 56-340W	HR 18.8	W-COLOR	WND-FCE 03	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1011.8	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
188	0000	134	3183		2388	14983
188	0010	1345	3181		2386	14986
188	0020	1292	3182		2397	14970
188	0030	0936	3214		2485	14849
188	0050	0363	3245		2582	14627
188	0075	0110	3263		2616	14522
188	0100	0011	3275		2631	14483
188	0110	0003	3277		2633	14481

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1340	3183		2388	14983	0000	00000	4030
0010	1345	3181		2386	14986	0041	00002	4057
0020	1292	3182		2397	14970	0081	00008	3952
0030	0936	3214		2485	14849	0116	00017	3117
0050	0363	3245		2582	14627	0170	00038	2191
0075	0110	3263		2616	14522	0221	00070	1865
0100	0011	3275		2631	14483	0266	00110	1719

C-REF-NO 005	YR 1962	DEPTH 137	WAVES 1	AIR T 13.8	VIS
CONS. NO 043	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 03
LAT 46-330N	DAY 21	NO.DPTH 8	WND-DIR 270	WW-CODE 02	
LON 56-030W	HR 21.8	W-COLOR	WND-FCE 03	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1012.5	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
218	0000	128	3185		2402	14963
218	0010	1219	3187		2415	14944
218	0020	1193	3189		2421	14936
218	0030	0619	3230		2542	14728
218	0050	0238	3252		2598	14574
218	0075	0035	3274		2629	14490
218	0100	-0020	3284		2640	14470
218	0135	-0042	3290		2645	14467

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1280	3185		2402	14963	0000	00000	3903
0010	1219	3187		2415	14944	0039	00002	3780
0020	1193	3189		2421	14936	0076	00008	3722
0030	0619	3230		2542	14728	0108	00016	2569
0050	0238	3252		2598	14574	0154	00034	2034
0075	0035	3274		2629	14490	0202	00064	1740
0100	-0020	3284		2640	14470	0244	00102	1636
0125	-0059	3290		2646	14457	0285	00148	1571

C-REF-NO 005	YR 1962	DEPTH 205	WAVES 1	AIR T 12.2	VIS
CONS. NO 044	MONTH 8	MXSAMPD 02	WAVES 2	WET B	STN 04
LAT 46-280N	DAY 22	NO.DPTH 9	WND-DIR 290	WW-CODE 02	
LON 54-540W	HR 03.3	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1012.5	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
033	0000	126	3189		2409	14956
033	0010	1267	3191		2409	14961
033	0020	1229	3191		2416	14949
033	0030	0578	3227		2545	14711
033	0050	0119	3266		2618	14523
033	0075	-0003	3286		2640	14474
033	0100	-0057	3292		2648	14454
033	0150	-0090	3304		2658	14449
033	0200	-0090	3312		2665	14458

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1260	3189		2409	14956	0000	00000	3837
0010	1267	3191		2409	14961	0039	00002	3838
0020	1229	3191		2416	14949	0077	00008	3771
0030	0578	3227		2545	14711	0109	00016	2544
0050	0119	3266		2618	14523	0153	00033	1847
0075	-0003	3286		2640	14474	0197	00061	1630
0100	-0057	3292		2648	14454	0237	00097	1560
0125	-0082	3298		2653	14448	0275	00141	1501
0150	-0090	3304		2658	14449	0312	00194	1453
0175	-0103	3308		2662	14448	0349	00254	1417
0200	-0090	3312		2665	14458	0384	00322	1389

C-REF-NO 005 YR 1962 DEPTH 148 WAVES 1 AIR T 12.2 VIS
 CONS. NO 045 MONTH 8 MXSAMPD 01 WAVES 2 WET B STN 05
 LAT 46-085N DAY 22 NO.DPTH 8 WND-DIR 220 WW-CODE 03
 LON 53-490W HR 08.0 W-COLOR WND-FCE 01 CLD-TPE
 MARSD SQ 150 W-TRNSP BARO 1011.8 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
080	0000	126	3182		2403	14955
080	0010	1269	3182		2401	14960
080	0020	1136	3185		2428	14916
080	0030	0234	3248		2595	14568
080	0050	-0018	3281		2637	14462
080	0075	-0088	3299		2654	14437
080	0100	-0105	3306		2661	14434
080	0145	-0098	3321		2672	14447

*TIME-DISTANCE CHECK FAILED

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1260	3182		2403	14955	0000	00000	3889
0010	1269	3182		2401	14960	0039	00002	3907
0020	1136	3185		2428	14916	0077	00008	3652
0030	0234	3248		2595	14568	0106	00015	2061
0050	-0018	3281		2637	14462	0143	00030	1662
0075	-0088	3299		2654	14437	0183	00055	1496
0100	-0105	3306		2661	14434	0220	00088	1435
0125	-0117	3317		2670	14434	0255	00128	1345

C-REF-NO 005	YR 1962	DEPTH 98	WAVES 1	AIR T 12.7	VIS
CONS. NO 046	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 05A
LAT 46-250N	DAY 22	NO.DPTH 7	WND-DIR 360	WW-CODE 01	
LON 53-300W	HR 10.3	W-COLOR	WND-FCE 01	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1011.8	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
103	0000	124	3185		2409	14949
103	0010	1243	3187		2410	14952
103	0020	0580	3229		2546	14710
103	0030	0150	3261		2612	14533
103	0050	0001	3284		2639	14472
103	0075	-0101	3299		2655	14431
103	0095	-0098	3308		2662	14436

*TIME-DISTANCE CHECK FAILED

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1240	3185		2409	14949	0000	00000	3830
0010	1243	3187		2410	14952	0038	00002	3823
0020	0580	3229		2546	14710	0070	00007	2530
0030	0150	3261		2612	14533	0093	00012	1905
0050	0001	3284		2639	14472	0128	00027	1648
0075	-0101	3299		2655	14431	0168	00052	1492

C-REF-NO 005	YR 1962	DEPTH 50	WAVES 1 00X0	AIR T 09.4	VIS
UNNS. NO 047	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 058
LAT 46-330N	DAY 22	NG.DPTH 5	WND-DIR CALM	WW-CODE 02	
LON 53-080W	HR 13.2	W-COLOR	WND-FCE 00	CLD-TPE	
MARKS SQ 150		W-TRNSP	BARO	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
132	0000	074	3216		2515	14769
132	0010	0728	3216		2517	14766
132	0020	0164	3261		2611	14537
132	0030	0010	3272		2629	14471
132	0048	-0059	3284		2641	14444

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0740	3216		2515	14769	0000	00000	2821
0010	0728	3216		2517	14766	0028	00001	2807
0020	0164	3261		2611	14537	0052	00005	1914
0030	0010	3272		2629	14471	0070	00010	1744

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CANADA

No. 2
1963 Data Record Series
OCEAN WEATHER STATION "P"
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Canadian Oceanographic Data Centre

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CANADIAN OCEANOGRAPHIC DATA CENTRE

No. 2

1963 Data Record Series

Ocean Weather Station "P" North Pacific Ocean

(C O D C Reference: 02-63-001)

Programmed by the Canadian Committee on Oceanography

FISHERIES RESEARCH BOARD OF CANADA

Ocean Weather Station "P" North Pacific Ocean

Ships: C.C.G.S. "St. Catharines"
C.C.G.S. "Stonetown"

Local Cruise designation: P - 63 - 1

Cruise period: January 15 - March 4, 1963

Observers: D.G. Robertson

Pacific Oceanographic Group - Nanaimo, B.C.

— ERRATA —

Publication No. 2 1963 DATA RECORD SERIES.

In SECTION IV, Bathythermograms C.C.G.S. "Stonetown", Patrol No.55.

pp. 88 to 91 incl: BTgms for 63/03/03/02.0 to 63/03/27/02.0 incl.
require a temperature correction of -0.3°C ;

pp. 91 to 93 incl: BTgms for 63/03/29/17.0 to 63/04/10/02.0 incl.
require a temperature correction of -0.8°C ;

p. 94: BTgms for 63/02/27/10.5 to 63/03/26/17.3 incl.
require a temperature correction of $+0.3^{\circ}\text{C}$;

pp. 94 to 95 incl: BTgms for 63/03/29/18.3 to 63/04/09/18.0 incl.
require a temperature correction of -0.8°C .



SECTION I

Description of data collection procedures



Figure 1.

The Canadian Weather Ship C.C.G.S. " St. Catharines ". (D.O.T. Photo)

The oceanographic winch is located on the starboard side of the signal deck, just aft of the bridge wing.



Figure 2.

The Canadian Weather Ship C.C.G.S. " Stonetown ".

Bathythermograph soundings boom can be seen below the bridge on the signal deck.

(D.O.T. Photo)

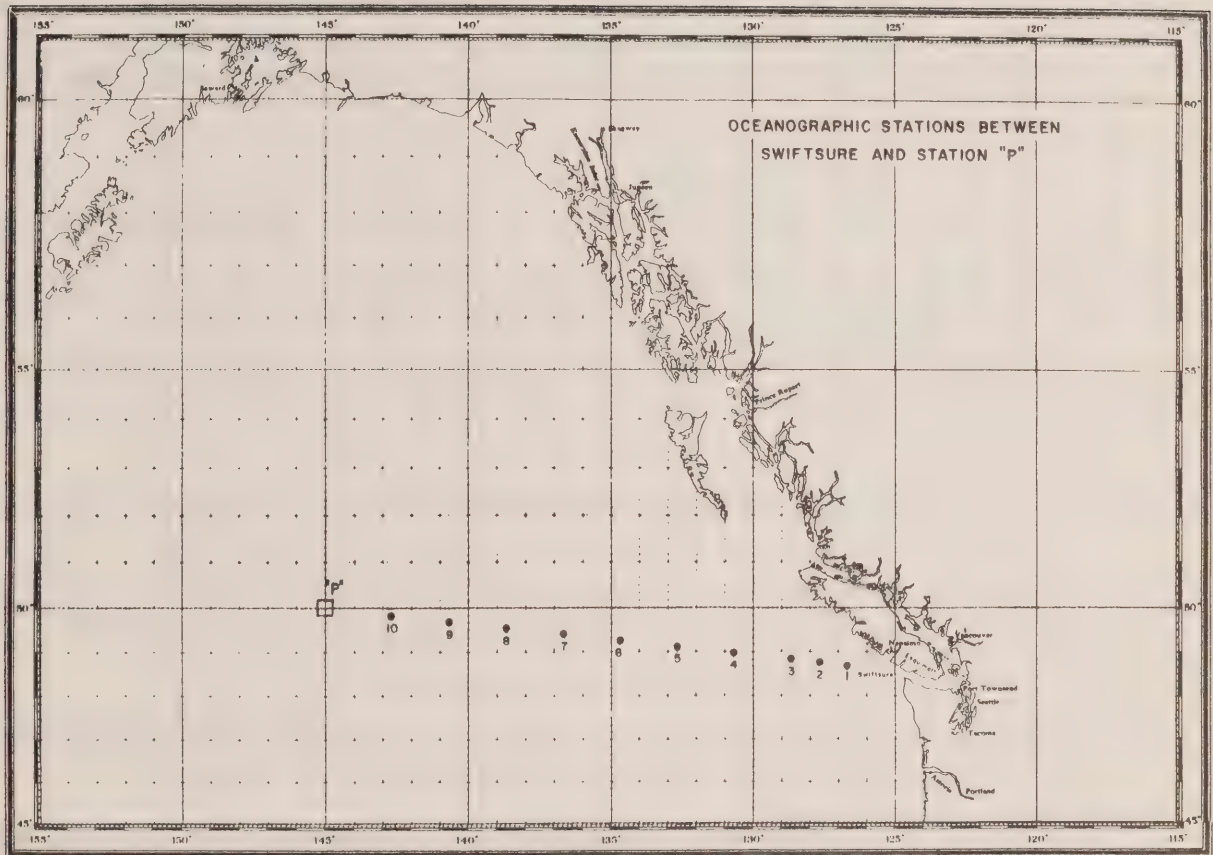


Figure 3. Locations of oceanographic stations observed between Swiftsure Bank and Ocean Weather Station "P".

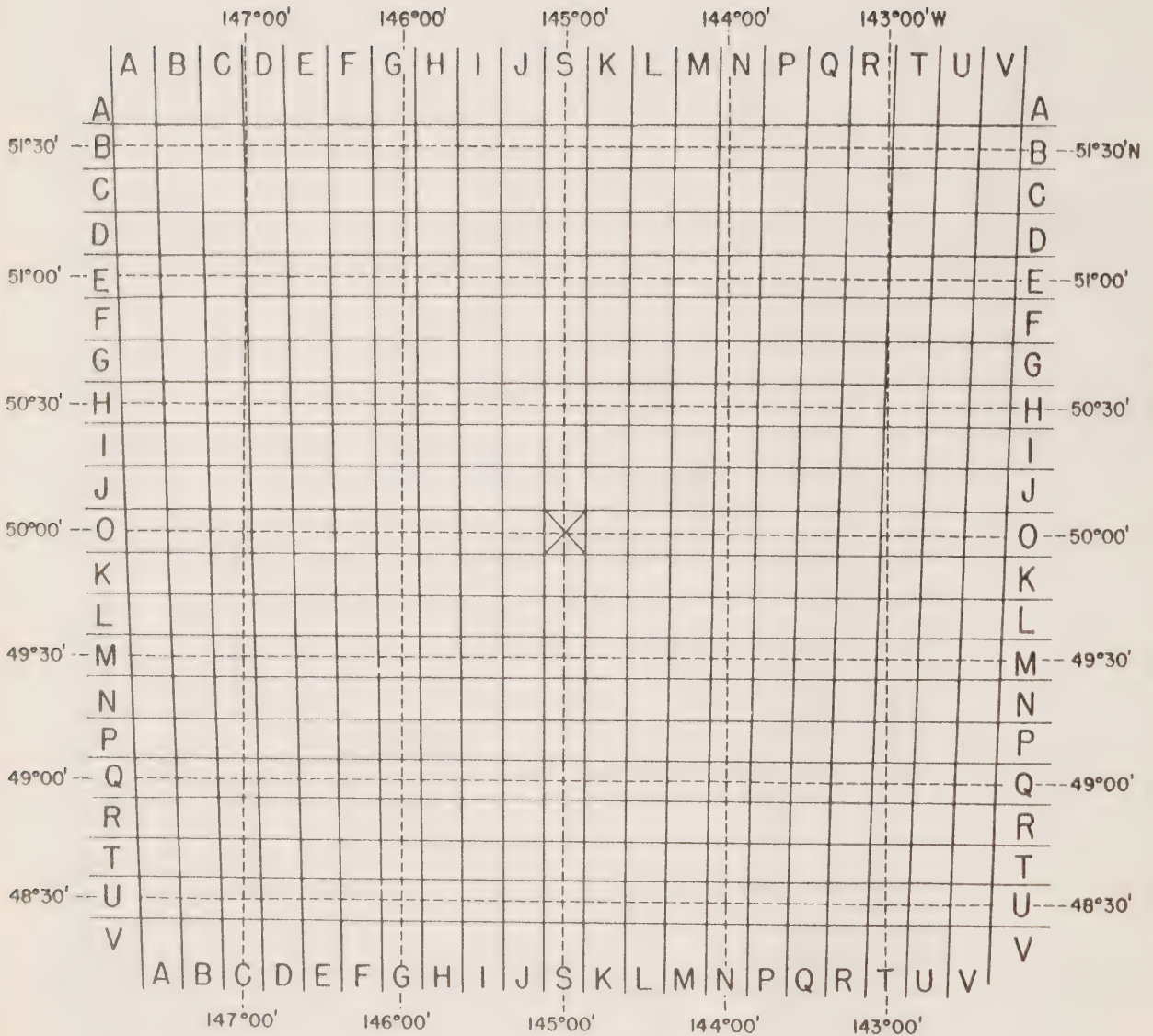


Figure 4.

Position-indicating grid for Ocean Weather Station "P", with mercator projection of a latitude and longitude grid superimposed.

INTRODUCTION

Canadian operation of Ocean Weather Station "P" (latitude 50° 00' N, longitude 145° 00' W) was inaugurated in December 1950. The Station is manned by two vessels of the Canadian naval frigate class operated by the Marine Services of the Department of Transport. They are the C.C.G.S. "St. Catharines" and the C.C.G.S. "Stonetown" (Fig. 1 and 2) (Atlantic Oceanographic Group, MS, 1961). Each ship remains on station for a period of 6 weeks, and is then relieved by the other ship, thus maintaining a continuous watch. The chief purpose of the Station is to maintain a meteorological station for surface and upper-air observations.

Bathythermograph observations have been made at Station "P" by the Pacific Oceanographic Group since July 1952. A program of more extensive oceanographic observations on board C.C.G.S. "St. Catharines" was commenced in August 1956. This was further extended in April 1959 by the addition of a series of oceanographic stations along the route to and from Station "P" and Swiftsure Bank (Fig. 3).

EXTRACT OF CRUISE LOG (P.S.T.)

Jan. 15, 0900: C.C.G.S. "St. Catharines" departed Esquimalt, B. C. enroute to Ocean Weather Station "P". Observed 10 oceanographic stations.

Jan. 18, 0800: relieved C.C.G.S. "Stonetown" on station. Maintained normal patrol routine until,

Mar. 1, 0800: relieved by C.C.G.S. "Stonetown", and returned to base.

Mar. 4, 0800: arrived at Esquimalt, B. C.

OBSERVATION PROCEDURES

General program of observations from C.C.G.S. "St. Catharines"

The C.C.G.S "St. Catharines" is equipped with deck and laboratory facilities required to make oceanographic observations. Oceanographers from the Pacific Oceanographic Group accompany the ship on each patrol.

Enroute to and returning from Station "P", ten oceanographic stations (Fig. 3) are observed, with serial observations of temperature and salinity to a depth of 2,000 m, and BT casts to 275 m. The stations are positioned at each alternate 40' of longitude interval. BT casts to 275 m are obtained at the intervening 40' longitudes, i.e. 129° 40' W, 131° 40' W, etc. At Station "P", a shallow oceanographic station to 400 m is observed weekly. An intermediate depth oceanographic station to 2,000 m is observed weekly, generally 4 days after the shallow station. At least 3 times during the survey, a deep cast from 2,000 to 4,200 m is observed within 2 days of an intermediate station. Serial observations of temperature, salinity and dissolved oxygen are made at all stations, and dissolved inorganic silicate observations are made occasionally at the intermediate and deep stations. A 275 m BT cast is also made at each station.

Twice-daily BT casts are made on Station at 0200 and 1700 G.M.T. A surface water sample for salinity determination is collected at the 0200 cast. Special series of BT casts to 130 m depth are made in the morning at frequent intervals during the patrol, for the purpose of providing ocean temperature information to the Canadian Oceanographic Information Service at Esquimalt (Giovando, MS, 1962).

Vertical zooplankton hauls from 150 m depth are made daily on Station, and from 1200 m twice during the patrol. Horizontal tows for collection of zooplankton are made at the beginning, middle and end of each patrol. Ocean productivity measurements of photosynthesis rate (C_{14} method), plant pigment concentration, and light extinction are made at frequent intervals during the survey.

Observational procedures, Survey P-63-1, C.C.G.S. "St. Catharines",

Jan. 16-Feb. 26, 1963

Ten oceanographic stations (Fig. 3) were occupied during the trip to Station "P". BT casts to 275 m depth were made at each station and at intervening locations of each 40' of longitude. Thirteen oceanographic stations were observed on Station "P" during the length of the patrol. BT casts to 275 m depth were made at the time of each oceanographic station, and at 0200 and 1700 G.M.T. daily, weather conditions permitting. Dissolved oxygen analyses were made on water samples obtained at 7 oceanographic stations at Station "P".

Vertical zooplankton hauls from 150 m depth were made at Station "P" on 21 days, and one haul from 1200 m was made. Surface horizontal plankton tows were made in the evening on 20 days. Ocean productivity measurements of photosynthetic rate and plant pigment concentrations were made on 25 daily seawater samples.

BT observations at 10-minute intervals for the OCEAN series were taken at 1800 G.M.T. on 15 days.

Program of observations, C.C.G.S. "Stonetown" Patrol No. 55, Mar. 3 - April 10, 1963

BT observations to 275 m were made daily at 0200 and 1700 G.M.T. whilst the ship was on station. Surface salinity samples were collected at the 0200 observation. OCEAN series observations to 130 m were made on 15 days during the patrol.

Oceanographic station procedures:

1. Serial observations were made at depths of 10, 20, 30, 50, 75, 100, 125, 150, 175, 200, 250, 300, 400, 500, 750, 1000, 1250, 1500, 2000, 2500, 3000, 3500, 4000 and 4200 metres, depending on the type of station observed and depth of water. The shallow stations to 400 m were observed in one cast. The intermediate depth stations to 2000 m were observed in 2 casts: the first to 400 m, the second from 500 to 2000 m. The deep cast stations had observations in the interval 2000 to 4200 m.
2. Surface samples (0 metres) for salinity and dissolved oxygen determinations were obtained with a one-gallon bucket made of "Uscolite CP", a corrosion-resistant thermoplastic material. The surface temperature was measured in this bucket sample with an armoured thermometer graduated in 0.5 C° intervals.
3. Samples at depth were obtained with Nansen reversing water samplers. From each sampler, the first sample was drawn into a 300 ml B.O.D. bottle for dissolved oxygen analysis. Then, a sample for salinity analysis was drawn into an 8-oz glass medicine bottle and sealed with a plastic-lined screw cap. These analyses were done in the shipboard laboratory.
4. Temperatures at depth were measured by deep-sea reversing thermometers of German (Richter & Wiese) or Japanese (Yoshino Keiki Co.) manufacture. Thirty-eight protected reversing thermometers were available for use, and samplers at the depth intervals 10, 30, 100, 175, 250 to 4200 m were equipped with 2 instruments each. The samplers at the other depths were equipped with one protected thermometer each. 12 unprotected reversing thermometers were used; samplers at all depths in the interval 250 to 4200 m were equipped with one thermometer each.
5. Secchi disc observations were taken with a white 30 cm diameter disc at 5 oceanographic stations.

6. Position measurements and meteorological observations were made by the officers of the watch.

LABORATORY PROCEDURES

Methods of analyses:

The salinity determinations of the samples collected during survey P-63-1 were made on an inductive salinometer, Model 601 MK III, manufactured by Auto-Lab Industries Pty. Ltd., Sydney, Australia (Brown and Hamon, 1961). The analyses were done within 4 or 5 days after the collection of the samples.

The dissolved oxygen analyses were done by a modified Winkler method.

Surface salinity data

These are presented in a table listing the date, position (grid or coordinates), and salinity values. The data for survey P-63-1 are the results of determinations on the auto-Lab inductive salinometer and are considered to have an accuracy of $\pm 0.003\%$. The data for "Stonetown" patrol No. 55 are the results of single determinations on the conductivity salinometer (Strickland, MS, 1958) and have an accuracy range of $\pm 0.009\%$.

BATHYTHERMOGRAPH DATA

Bathythermograms

The BT traces have been drawn on standard pre-printed graphs resembling BT calibration grids of several depth ranges. The slides were positioned on the appropriate calibration grid in an adjustable holder and displayed in a reflecting-type projector.

Traces obtained at all oceanographic stations and those obtained in the regular twice-daily series by both ships, are aligned on the grid using a surface temperature value obtained from a thermograph recording of the engineroom intake temperature. The top of the trace was always aligned with the zero depth grid line.

The bathythermograms are arranged in a chronological order in two sections for each ship, the first showing the oceanographic station and twice-daily observations, and the second showing the observations in the OCEAN series. The date/time and location information are noted below each bathythermogram, using the C.O.D.C. coding system.

he locations of BT observations taken during survey P-63-1 in the Station "P" grid (Fig. 4) are indicated by the grid letter designator group (cf. U.S. C.G. chart No. CG-3015, Apr. 1950). It is assumed the ship is in the centre of the grid square. (Future BT observations by C.C.G.S. "St. Catharines" on Station "P" will be identified by the latitude-longitude coordinates). Those BT observations made at an oceanographic station are identified by an asterisk (*) preceding the date-time group.

Only one of the eight slides in each day's OCEAN group was reproduced as a bathythermogram. This slide was chosen as being representative of the group. The position coordinates are those of the last slide in the group.

PERSONNEL (P.O.G.)

The oceanographer on board C.C.G.S. "St. Catharines" for survey P-63-1 was Mr. D. G. Robertson. The captain was Mr. F. G. Nesbit. Members of the crew assisted in the oceanographic work, operating the winch and handling the gear. The regular BT observations on both ships were made by the quartermasters, under the supervision of the officers of the watch.

The following persons assisted in the preparation of the data for presentation to the Canadian Oceanographic Data Centre:

D. G. Robertson:	preparing and checking data summary form
J. S. Gow:	drawing bathythermograms.

SECTION II

Description of the machine-generated data record

INTRODUCTION (Section II)

The following section is devoted to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms are transferred to punch cards for subsequent electronic data processing.

The data are processed on an IBM 1620 computer using the OCEANS II program (Sauer, C.D. and Fofonoff, N.P., 1963).

Besides computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and interpolation at Standard Oceanographic Depths.

After the data have been processed, the data-record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous duplimat masters. The duplimat masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a Standard Deviation (σ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "General Information" of Section II of the Data Record.

The measurement error estimate of a specific observation is stated as a multiple of the standard deviation derived as above and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, i.e., $1\sigma = A$, $2\sigma = B$, etc. (In the data record $1\sigma (A)$ is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray. A parabola is fitted through 3 values of a given variable (T, S, O₂) considered as a function of depth. The two interpolation parabolas require a total of 4 points (observed depths). The middle points are common to both parabolas. The average of the 2 values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement under normal routine field conditions (σ) by:

$$\frac{\sigma_i}{\sigma} = \left\{ \frac{(\Delta V_i)^2}{\sigma^2} + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left(\frac{\sigma_n}{\sigma} \right)^2 \right\}^{\frac{1}{2}}, \text{ where}$$

σ_i = Standard deviation of the combined error estimates at standard oceanographic depth

$$\Delta V_i = \frac{1}{3} (V_{i,1} - V_{i,2}),$$

the interpolation error estimate of variable "V" at standard oceanographic depth.

γ = Interpolation polynomial coefficient.

Z_j = Observed depth.

Z_i = Standard oceanographic depth, such that: $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of this fraction $\frac{\sigma_i}{\sigma}$ is reported in the Data Record, e.g.: 2 = B, 3 = C, etc.

With respect to the interpolated value of the Salinity variable if reported to three decimal digits, the "interpolation error estimate" is given only when $\frac{\sigma_i}{\sigma} \geq 2$. If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

GENERAL INFORMATION

Institute: Pacific Oceanographic Group Nanaimo, B. C.

Observation Platforms: C.C.G.S. "St. Catharines" and C.C.G.S. "Stonetown".

Vessels' Cruising Speed: 13 knots.

Total Number of Stations Occupied: 23

Nemometer Height Above Sea Level: 15 metres

Water transparency was obtained using a Secchi Disc.

Barometer readings were obtained using an Aneroid Barometer and were corrected prior to recording.

Air temperature was observed from a Sling Psychrometer.

Wet bulb temperature was observed from a Sling Psychrometer.

Surface sea water temperature was obtained from a bucket sample using a deck thermometer.

The following Standard Deviations were used to express both measurement and interpolation error estimates:

Temperature	0.02
Salinity	0.002
Oxygen	0.03

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE
NUMBER: Assigned by the Institute. Starts off with
001 at the beginning of each year (effective
Jan. 1, 1963). Prior to that date the
C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE
NUMBER: Indicates the chronological order in which
the stations were observed.

(3) LATITUDE: Latitude and longitude give the position
of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE: Designates the geographic area code
(see marsden square chart) in which
the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR: The time (Greenwich Mean Time) at which
the environmental surface observations
were made.

It is reported to tenths of hours.

If an "X" precedes the value for HOUR,
(prior to Jan. 1, 1963) it indicates that
the reported time is doubtful.

(10) DEPTH The sounding: The measured distance (by
any method) from surface to bottom,
corrected and reported in meters.

(11) MAXIMUM

SAMPLING DEPTH: A code to indicate the deepest sampling depth.

00 m - 50 m = 00

51 m - 150 m = 01

151 m - 250 m = 02

etc.

(12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).

(13) WATER COLOUR: A code based on the percentage of yellow (see table 2).

(14) WATER

TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage; the General Information Chapter in Section II of the data record will state which method was used.

(15) WAVES 1

(D_wD_wP_wH_w-code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(16) WAVES 2

(D_wD_wP_wH_w-code): The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:- wind variable or direction unknown.

(18) WIND FORCE
(WND-FCE):

Beaufort Notation (See Table 6).

WIND SPEED
(WND-SPD):

Anemometer reading in metres per second.

(19) BAROMETER:

The barometric pressure expressed in millibars: the General Information Chapter in Section II of the data record will state the type of instrument, and whether corrections have been applied.

(20) AIR TEMPERATURE: To 1/10 of a degree Centigrade.

- (21) WET BULB: To 1/10 of a degree Centigrade.
- (22) WW CODE: Present Weather Code (See Table 7).
Ref: WMO Code 4677.
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8).
Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9).
Ref: WMO Code 2700.
- (25) VISIBILITY: Visibility at the surface (See Table 10).
Ref: WMO Code 4300.
- (26) STATION: A strictly local station reference number,
usually assigned prior to carrying out
a cruise.
- (27) HOURS AFTER
HIGH WATER: Indicates the state of the tide for nearshore
observations.

OBSERVED DATA HEADINGS

(1) GMT (2) DEPTH (3) TEMP (4) SAL (5) OXYGEN (6) SGMT (7) SOUND (8) PO ₄ (9) -P- (10) NO ₂ (11) NO ₃ (12) SiO ₃ (13) pH.
--

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical observations were collected during the cruise.

- (1) G. M. T. The Greenwich Mean Time of in-situ thermometer inversion and sea water sample collection.

When a multiple cast was initiated before and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH:

The depth in meters is computed from the meter wheel reading, the wire angle, and the corrected unprotected thermometer reading at the moment the oceanographic bottle reversed.

Alphabetical characters "B" to "I", (if present), immediately to the right of this column, are measurement error estimates (see: "Introduction" to Section II of the data record).

(3) TEMPERATURE:

In-situ temperatures from deepsea reversing thermometers graduated in 0.1° C. intervals, and read to 0.01° C. Surface temperature collection procedures as indicated in the chapter "Observation Procedures" of Section I, and/or under "General Information" of Section II.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(4) SALINITY:

Salinity as defined by:

$$S = 0.03 + 1.805 \text{ Cl } \text{‰}$$

a. 1/100 parts per 1000, or

b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (2).

In case b: no error estimate indication is provided for, but the additional decimal digit takes its place.

(5) OXYGEN:

The concentration of dissolved oxygen as expressed in millilitres per litre to 2 decimal places.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(6) SIGMA-T:

The density as defined by $\sigma_t = (\text{Specific gravity} - 1) \times 1000$, and expressed in milligrams per cm^3 i.e., Sigma-T reported as 2456 reads 24.56 milligrams/ cm^3 and corresponds to a specific gravity of 1.02456

- (7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula, expressed in terms of temperature, salinity and total pressure.
- (8) PO_4 Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre
- (9) -P- Total Phosphorus reported to hundredths of microgram-atoms per litre
- (10) NO_2 Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre -No dissolved nitrogen included-
- (11) NO_3 Nitrate-Nitrogen reported to tenths of microgram-atoms per litre
- (12) SiO_3 Silicate-Silicon reported in whole microgram-atoms per litre
- (13) pH The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

INTERPOLATED DATA HEADINGS

(1) DEPTH (2) TEMP (3) SAL (4) OXYGEN (5) SGMT (6) SOUND (7) DELTA-D (8) POT-EN (9) SV A.
--

- (1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

(2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(3) SALINITY

A. The reported salinity values are observed to three decimal places.

- (i) the interpolation error estimate is less than twice the standard deviation of measurement

-the interpolated value is reported to three decimal places (e.g., 30.139).

- (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.

-the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e.g., 29.23C).

B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.

-the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e.g., 30.59B).

(4) OXYGEN: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(5) SIGMA-T: Computed from Temperature and Salinity values at standard oceanographic depth, and expressed in mgms/cm³ (e.g., 23.19).

(6) SOUND
VELOCITY:

Computed from temperature and salinity values at standard oceanographic depth, and expressed in tenths of metres per second (e.g., 1462.3 m/sec).

(7) DELTA-D: The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P [\alpha(\tau, s, p) - \alpha_{35,0,p}] dp$$

ΔD is expressed in dynamic metres (10^5 ergs/gram) and recorded to three decimal places (e. g., 2.345 dyn. metres).

(8) POTENTIAL
ENERGY
ANOMALY:

The Potential energy anomaly χ as defined by:

$$\chi = 1/g \int_0^P \rho \delta dp = \int_0^z \rho \delta dz$$

χ is expressed in units of 10^8 ergs/cm² and recorded to two decimal places (e. g., 116.44).

(9) SPECIFIC
VOLUME
ANOMALY:

The specific volume anomaly as defined by;

$$\delta = \alpha - \alpha_{35,0,p}$$

δ is conventionally reported as $10^5 \delta$, and recorded to one decimal place (e. g., 0.001234 is recorded as 123.4).

SPECIAL CHARACTERS

† (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side refers to the appropriate level.

* (Asterisk) : to the left of the "Interpolated Data" marks standard depth levels according to the following specifications:

If three or more standard depth levels fall within an observed depth interval, the third and all consequent levels within that interval are preceded by an asterisk to indicate that more than two interpolations were carried out utilizing the same set of interpolation parabolas.

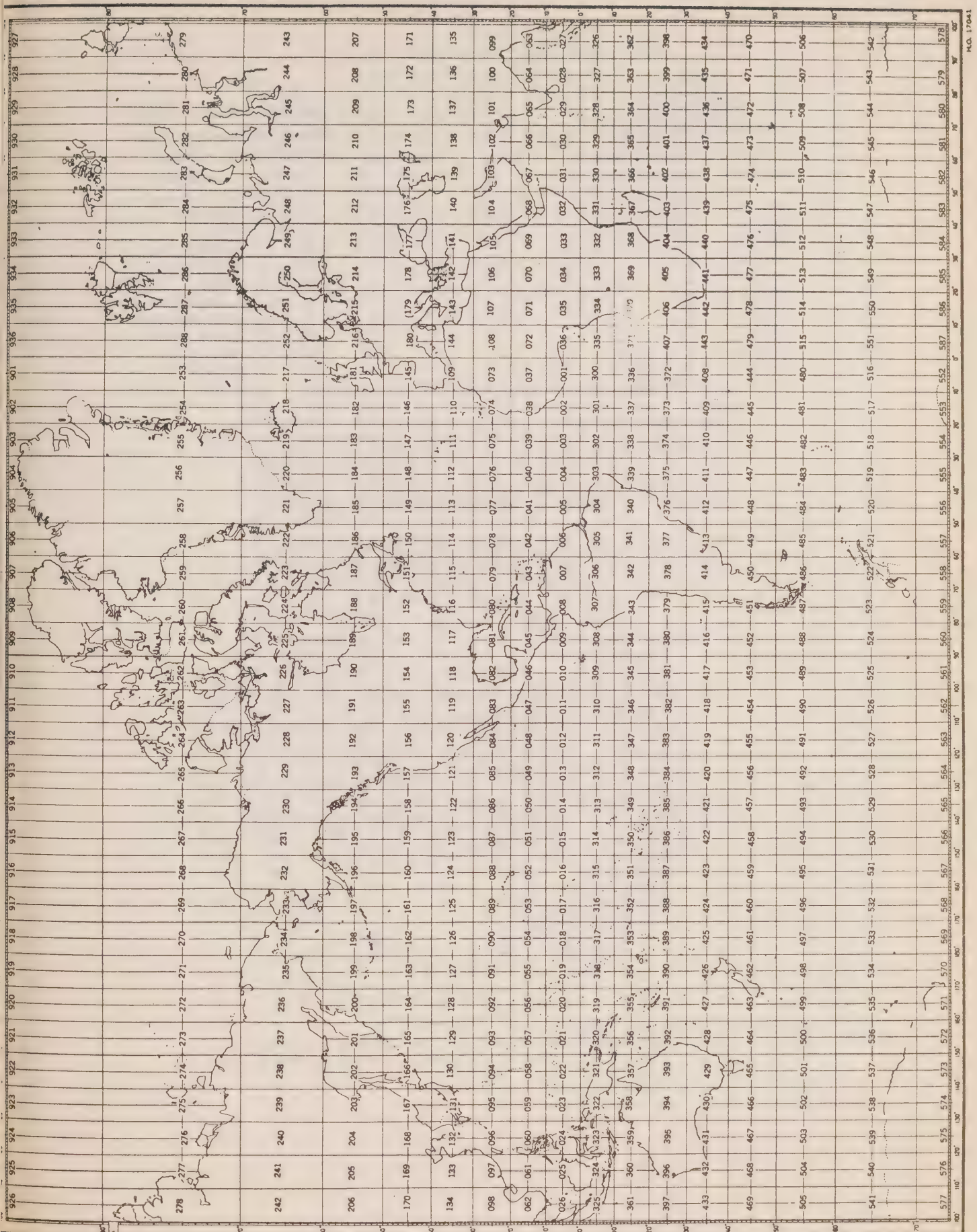


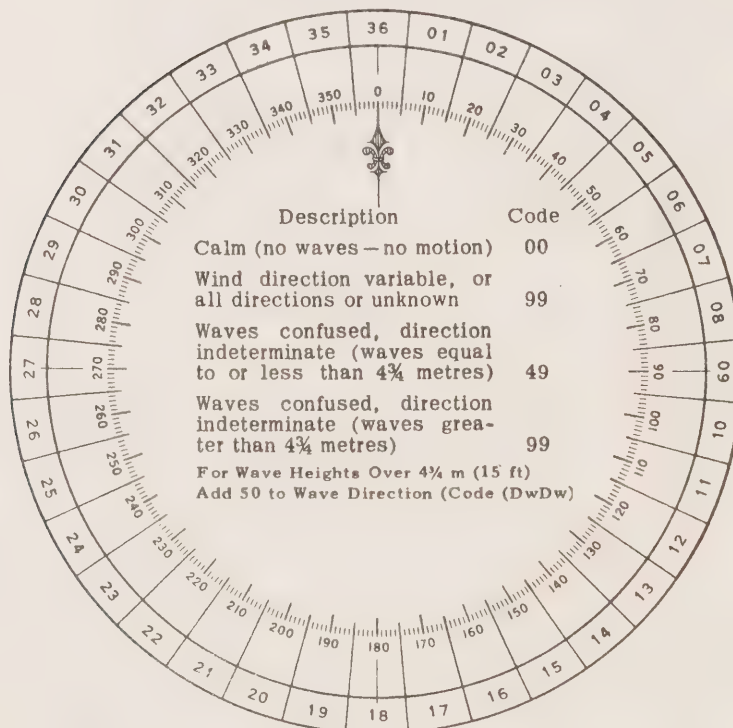
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (Pw)
(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (Hw)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than ¼ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	½ m (1½ ft)		1 5½ m (17½ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	1½ m (5 ft)		3 6½ m (21 ft)
4	2 m (6½ ft)		4 7 m (22½ ft)
5	2½ m (8 ft)		5 7½ m (24 ft)
6	3 m (9½ ft)		6 8 m (25½ ft)
7	3½ m (11 ft)		7 8½ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	4½ m (14 ft)		9 9½ m (30½ ft) or more
x	Height not determined		

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure ww			
No meteors except photometers	00	Cloud development not observed or not observable	characteristic change of the state of sky during the past hour
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
	03	Clouds generally forming or developing	
Haze, dust, sand or smoke	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes	
	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	
	11	{ Patches of } shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea	
	12		{ More or less continuous }
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precepitation at the time of observation	
	18	Squalls	{ at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel clouds	
ww = 20 - 29		Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	
	20	Drizzle (not freezing) or snow grains	not falling as shower(s)
	21	Rain (not freezing)	
	22	Snow	
	23	Rain and snow or ice pellets, type (a)	
	24	Freezing drizzle or freezing rain	
	25	Shower (s) of rain	
	26	Shower (s) of snow, or of rain and snow	
	27	Shower (s) of hail, or of rain and hail	
	28	Fog or ice fog	
	29	Thunderstorm (with or without precipitation)	
ww = 30 - 39		Duststorm, sandstorm, drifting or blowing snow	
	30	{ Slight or moderate duststorm or sandstorm }	- has decreased during the preceding hour
	31		- no appreciable change during the preceding hour
	32		- has begun or has increased during the preceding hour
	33	{ Severe duststorm or sandstorm }	- has decreased during the preceding hour
	34		- no appreciable change during the preceding hour
	35		- has begun or has increased during the preceding hour
	36	Slight or moderate blowing snow	{ generally low (below eye level)
	37	Heavy drifting snow	
	38	Slight or moderate blowing snow	{ generally high (above eye level)
	39	Heavy blowing snow	
ww = 40 - 49		Fog or ice fog at the time of observation	
	40	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
	41	Fog or ice fog in patches	
	42	{ Fog or ice fog, sky visible }	{ has become thinner during the preceding hour
	43		
	44	{ Fog or ice fog, sky visible }	{ no appreciable change during the preceding hour
	45		
	46	{ Fog or ice fog, sky visible }	{ has begun or has become thicker during the preceding hour
	47		
	48	Fog, depositing rime, sky visible	
	49	Fog, depositing rime, sky invisible	

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

- | | | | |
|----|--|---|--------------------------------------|
| 50 | Drizzle, not freezing, intermittent | { | slight at time of observation |
| 51 | Drizzle, not freezing, continuous | | |
| 52 | Drizzle, not freezing, intermittent | { | moderate at time of observation |
| 53 | Drizzle, not freezing, continuous | | |
| 54 | Drizzle, not freezing, intermittent | { | heavy (dense) at time of observation |
| 55 | Drizzle, not freezing, continuous | | |
| 56 | Drizzle, freezing, slight | | |
| 57 | Drizzle, freezing, moderate or heavy (dense) | | |
| 58 | Drizzle and rain, slight | | |
| 59 | Drizzle and rain, moderate or heavy | | |

ww = 60 - 69 Rain

- | | | | |
|----|---|---|---------------------------------|
| 60 | Rain, not freezing, intermittent | { | slight at time of observation |
| 61 | Rain, not freezing, continuous | | |
| 62 | Rain, not freezing, intermittent | { | moderate at time of observation |
| 63 | Rain, not freezing, continuous | | |
| 64 | Rain, not freezing, intermittent | { | heavy at time of observation |
| 65 | Rain, not freezing, continuous | | |
| 66 | Rain, freezing, slight | | |
| 67 | Rain, freezing, moderate or heavy | | |
| 68 | Rain or drizzle and snow, slight | | |
| 69 | Rain or drizzle and snow, moderate or heavy | | |

70 - 79 Solid precipitation not in showers

- | | | | |
|----|---|---|---------------------------------|
| ww | | | |
| 70 | Intermittent fall of snow flakes | { | slight at time of observation |
| 71 | Continuous fall of snow flakes | | |
| 72 | Intermittent fall of snow flakes | { | moderate at time of observation |
| 73 | Continuous fall of snow flakes | | |
| 74 | Intermittent fall of snow flakes | { | heavy at time of observation |
| 75 | Continuous fall of snow flakes | | |
| 76 | Ice prisms (with or without fog) | | |
| 77 | Snow grains (with or without fog) | | |
| 78 | Isolated starlike snow crystals (with or without fog) | | |
| 79 | Ice pellets, type (a) | | |

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

- | | | | |
|----|--|---|---|
| 80 | Rain shower(s), slight | | |
| 81 | Rain shower(s), moderate or heavy | | |
| 82 | Rain shower(s), violent | | |
| 83 | Shower(s) of rain and snow mixed, slight | | |
| 84 | Shower(s) of rain and snow mixed, moderate or heavy | | |
| 85 | Snow shower(s), slight | | |
| 86 | Snow shower(s), moderate or heavy | | |
| 87 | Shower(s) of snow pellets or ice pellets, type (b), with or without rain or rain and snow mixed | { | - slight |
| 88 | | | |
| 89 | Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder | { | - moderate or heavy |
| 90 | | | |
| 91 | Slight rain at time of observation | | |
| 92 | Moderate or heavy rain at time of observation | | |
| 93 | Slight snow, or rain and snow mixed or hail at time of observation | | thunderstorm during the preceding hour but not at time of observation |
| 94 | Moderate or heavy snow, or rain and snow mixed or hail at time of observation | | |
| 95 | Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation | { | thunderstorm at time of observation |
| 96 | Thunderstorm, slight or moderate, with hail at time of observation | | |
| 97 | Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation | | |
| 98 | Thunderstorm, combined with duststorm or sandstorm at time of observation | | |
| 99 | Thunderstorm, heavy, with hail at time of observation | | |

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
0	Less than 50 metres (less than 55 yards)
1	50-200 metres (approx. 55-220 yards)
2	200-500 metres (approx. 220-550 yards)
3	500-1,000 metres (approx. 550 yards- $\frac{1}{2}$ n.m.)
4	1-2 km (approx. $\frac{3}{4}$ -1 n.m.)
5	2-4 km (approx. 1-2 n.m.)
6	4-10 km (approx. 2-6 n.m.)
7	10-20 km (approx. 6-12 n.m.)
8	20-50 km (approx. 12-30 n.m.)
9	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

SECTION III

Serial oceanographic data

C-REF-NO 001 YR 1963 DEPTH WAVES 1 34X2 AIR T 08.6 VIS 98
 CONS. NO 001 MONTH 1 MXSAMPD 12 WAVES 2 27XX WET B 07.9 STN 001
 LAT 48-415N DAY 16 NO.DPTH 18 WND-DIR 340 WW-CODE 02
 LON 126-395W HR 05.1 W-COLOR WND-SPD 08 CLD-TPE
 MARSD SQ 157 W-TRNSP BARO 1026. CLD-AMT 0 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
051	0000	087 B	30599		2375	14799
051	0010	0872	30579		2373	14801
051	0020	0884 C	30743		2384	14809
051	0029	0989	32323		2490	14870
051	0049	0970 C	32316		2493	14867
051	0073	0909 C	32752		2537	14853
051	0098	0851	33199		2581	14841
051	0122	0793 B	33551		2617	14828
051	0147	0772 B	33754		2636	14826
051	0171	0739 B	33852		2648	14819
051	0196	0721 C	33923		2656	14817
051	0245	0667	33970		2667	14804
051	0294	0626 B	33995		2675	14796
051	0392	0546	34052		2689	14781
055	0484	0494	34100		2699	14775
055	0729	0416 B	34281		2722	14786
055	0979	0350 B	34388		2737	14801
055	1175	0307	34464		2747	14817

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0870 B	30599		2375	14799	0000	00000	4161
0010	0872	30579		2373	14801	0042	00002	4180
0020	0884 C	30743		2384	14809	0083	00008	4077
0030	0993 B	3238 I		2494	14872	0119	00017	3029
0050	0968 C	3233 B		2494	14866	0180	00042	3029
0075	0904 C	32789		2540	14852	0251	00087	2596
0100	0846	33233		2584	14840	0311	00140	2184
0125	0790 B	33582		2620	14827	0362	00198	1848
0150	0768 B	33770		2638	14825	0406	00261	1683
0175	0736 B	33865		2650	14818	0447	00329	1571
0200	0717 C	33930		2657	14816	0486	00403	1501
0225	0690 B	3396 B		2664	14810	0523	00484	1446
0250	0663	33973		2668	14803	0559	00572	1404
0300	0621 B	33998		2676	14795	0628	00766	1337
0400	0541	34056		2690	14780	0756	01224	1207
0500	0487	34112		2701	14775	0873	01763	1113
0600	0451 B	3419 C		2711	14778	0981	02371	1025

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0700	0423 B	3426 B		2720	14784	1081	03035	0947
0800	0396 B	34316		2727	14790	1173	03746	0883
1000	0345	3441 C		2739	14803	1341	05286	0773

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 34X2	AIR T 08.0	VIS 98
CONS. NO 002	MONTH 1	MXSAMPD 24		WAVES 2 27XX	WET B 06.9	STN 002
LAT 48-460N	DAY 16	NO.DPTH 21		WND-DIR 340	WW-CODE 02	
LON 127-400W	HR 09.4	W-COLOR		WND-SPD 09	CLD-TPE 8	
MARSD SQ 157		W-TRNSP		BARO 1027.	CLD-AMT 6	HW

O B S E R V E D

	GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
094	0000	092 B	32400			2508	14841
094	0010	0931 B	32392			2505	14847
094	0020	0931 C	32396			2505	14848
094	0030	0932 C	32396			2505	14850
094	0050	0930 C	32393			2505	14853
094	0075	0901 C	32434			2513	14847
094	0100	0765	33166			2591	14808
094	0125	0748 B	33606			2628	14811
094	0150	0730 B	33763			2642	14811
094	0175	0705 C	33866			2654	14806
094	0200	0668 C	33912			2663	14796
094	0250	0608	33936			2672	14781
094	0300	0590 B	33995			2679	14783
094	0400	0520	34046			2692	14771
099	0500	0478	34125			2703	14772
099	0750	0408 B	34292			2724	14786
099	1000	0337 C	34398			2739	14799
099	1250	0294	34478			2750	14824
099	1500	0247	34530			2758	14846
099	2000	0188	34613			2769	14907
099	2400	0178	34641			2772	14971

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0920 B	32400		2508	14841	0000	00000	2895
0010	0931 B	32392		2505	14847	0029	00002	2919
0020	0931 C	32396		2505	14848	0059	00006	2918
0030	0932 C	32396		2505	14850	0088	00014	2921
0050	0930 C	32393		2505	14853	0147	00038	2924
0075	0901 C	32434		2513	14847	0219	00084	2854
0100	0765	33166		2591	14808	0282	00139	2119
0125	0748 B	33606		2628	14811	0331	00195	1773
0150	0730 B	33763		2642	14811	0374	00255	1635
0175	0705 C	33866		2654	14806	0414	00322	1529
0200	0668 C	33912		2663	14796	0451	00394	1449
0225	0634 B	3393 C		2668	14787	0487	00472	1397
0250	0608	33936		2672	14781	0522	00557	1361
0300	0590 B	33995		2679	14783	0589	00746	1301

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0400	0520	34046		2692	14771	0715	01194	1190
0500	0478	34125		2703	14772	0830	01724	1092
0600	0447 B	34198		2712	14776	0936	02323	1011
0700	0420 B	34263		2720	14783	1035	02980	0941
0800	0393 B	34317		2727	14788	1127	03688	0878
1000	0337 C	34398		2739	14799	1294	05222	0770
1200	0302	34464		2748	14819	1442	06894	0695
1500	0247	34530		2758	14846	1639	09612	0601
2000	0188	34613		2769	14907	1917	14553	0493

C-REF-NO 001 YR 1963 DEPTH WAVES 1 36X2 AIR T 08.3 VIS 98
 CONS. NO 003 MONTH 1 MXSAMPD 24 WAVES 2 27XX WET B 07.2 STN 003
 LAT 48-510N DAY 16 NO.DPTH 21 WND-DIR 360 WW-CODE 02
 LON 128-400W HR 14.2 W-COLOR WND-SPD 08 CLD-TPE 8
 MARSD SQ 157 W-TRNSP BARO 1028. CLD-AMT 4 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
142	0000	089 B	32341		2508	14829
142	0010	0905	32338		2505	14836
142	0020	0906 C	32336		2505	14838
142	0030	0906	32337		2505	14840
142	0050	0905 C	32339		2505	14843
142	0075	0885 C	32704		2537	14844
142	0100	0765	33190		2593	14809
142	0125	0771 B	33629		2626	14821
142	0150	0744 B	33768		2641	14816
142	0175	0725 B	33891		2653	14814
142	0200	0695 C	33922		2660	14807
142	0250	0634	33949		2670	14792
142	0300	0603	33986		2677	14788
142	0400	0522	34026		2690	14772
148	0489	0485	34108		2701	14773
148	0732	0406 B	34271		2722	14782
148	0978	0342 B	34395		2739	14798
148	1225	0292	34477		2750	14819
148	1475	0255	34524		2757	14846
148	1975	0197	34595		2767	14906
148	2375	0179	34628		2771	14967

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0890 B	32341		2508	14829	0000	00000	2894
0010	0905	32338		2505	14836	0029	00002	2920
0020	0906 C	32336		2505	14838	0059	00006	2925
0030	0906	32337		2505	14840	0088	00014	2926
0050	0905 C	32339		2505	14843	0147	00038	2926
0075	0885 C	32704		2537	14844	0217	00082	2630
0100	0765	33190		2593	14809	0276	00135	2102
0125	0771 B	33629		2626	14821	0325	00191	1788
0150	0744 B	33768		2641	14816	0369	00251	1651
0175	0725 B	33891		2653	14814	0409	00318	1537
0200	0695 C	33922		2660	14807	0447	00391	1477
0225	0663 B	33938		2665	14799	0483	00471	1427
0250	0634	33949		2670	14792	0519	00557	1385
0300	0603	33986		2677	14788	0587	00750	1324

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0400	0522	34026		2690	14772	0715	01206	1207
0500	0481	34117		2702	14773	0831	01742	1101
0600	0446	34190		2712	14776	0938	02344	1016
*0700	0415 B	34253		2720	14780	1037	03003	0942
0800	0387 B	34309		2727	14786	1129	03711	0877
1000	0337 B	34404		2740	14799	1295	05239	0766
1200	0296	34470		2749	14816	1442	06893	0684
1500	0251	34528		2757	14848	1639	09606	0607
2000	0197	34597		2767	14911	1924	14692	0515

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 36X2	AIR T 06.1	VIS
CONS. NO 004	MONTH 1	MXSAMPD	15	WAVES 2 27XX	WET B 06.1	STN 004
LAT 49-010N	DAY 16	NO.DPTH	19	WND-DIR 360	WW-CODE 41	
LON 130-400W	HR 21.9	W-COLOR		WND-SPD 08	CLD-TPE 7	
MARSD SQ 158		W-TRNSP		BARO 1030.	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
219	0000	082 B	32506		2531	14804
219	0010	0822	32501		2530	14807
219	0020	0822 C	32495		2530	14808
219	0030	0820	32497		2530	14809
219	0050	0818 C	32496		2531	14812
219	0075	0820 C	32506		2531	14817
219	0100	0708	33336		2612	14788
219	0125	0681 B	33783		2651	14788
219	0150	0650 B	33874		2662	14781
219	0175	0610	33912		2670	14769
219	0200	0583 C	33925		2675	14763
219	0250	0540	33961		2683	14754
219	0300	0528 B	33988		2686	14757
219	0400	0478	34038		2696	14754
223	0500	0449	34149		2708	14760
223	0750	0380 B	34304		2728	14775
223	1000	0316 C	34410		2742	14791
223	1250	0266	34471		2752	14812
223	1500	0235	34521		2758	14841

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0820 B	32506		2531	14804	0000	00000	2671
0010	0822	32501		2530	14807	0027	00001	2679
0020	0822 C	32495		2530	14808	0054	00006	2685
0030	0820	32497		2530	14809	0081	00012	2683
0050	0818 C	32496		2531	14812	0135	00035	2684
0075	0820 C	32506		2531	14817	0202	00078	2683
0100	0708	33336		2612	14788	0260	00129	1916
0125	0681 B	33783		2651	14787	0304	00178	1551
0150	0650 B	33874		2662	14781	0342	00231	1447
0175	0610	33912		2670	14769	0377	00291	1372
0200	0583 C	33925		2675	14763	0411	00356	1332
0225	0559 B	33943		2679	14757	0444	00428	1293
0250	0540	33961		2683	14754	0477	00507	1260
0300	0528 B	33988		2686	14757	0539	00684	1231
0400	0478	34038		2696	14754	0659	01113	1146
0500	0449	34149		2708	14760	0770	01620	1040

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0421	3422 C		2717	14766	0871	02190	0961
0700	0393 B	3428 B		2724	14772	0965	02816	0896
0800	0366 B	34329		2731	14777	1052	03491	0839
1000	0316 C	34410		2742	14790	1212	04959	0738
1200	0275	34461		2750	14807	1354	06562	0666
1500	0235	34521		2758	14841	1546	09210	0593

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 35X1	AIR T 05.8	VIS
CONS. NO 005	MONTH 1	MXSAMPD	14	WAVES 2 27XX	WET B 05.5	STN 005
LAT 49-100N	DAY 17	NO.DPTH	19	WND-DIR 350	WW-CODE 41	
LON 132-400W	HR 05.2	W-COLOR		WND-SPD 02	CLD-TPE 7	
MARSD SQ 158		W-TRNSP		BARO 1029.	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
052	0000	083 B	32494		2529	14808
052	0010	0842	32494		2527	14814
052	0019	0842 C	32496		2527	14816
052	0029	0842 C	32495		2527	14817
052	0049	0840 C	32493		2527	14820
052	0073	0832 C	32501		2529	14821
052	0097	0774	32730		2555	14806
052	0121	0651 B	33122		2603	14766
052	0146	0659 B	33492		2631	14778
052	0170	0674 B	33773		2651	14792
052	0194	0665 C	33859		2659	14794
052	0243	0608	33918		2671	14780
052	0292	0567	33941		2678	14771
052	0391	0505	34016		2691	14763
057	0476	0467	34089		2701	14763
057	0716	0388 B	34249		2722	14772
057	0958	0326 C	34383		2739	14787
057	1202	0278	34463		2750	14809
057	1448	0242 C	34514		2757	14835

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0830 B	32494		2529	14808	0000	00000	2694
0010	0842	32494		2527	14814	0027	00001	2713
0020	0842 C	32496		2527	14816	0054	00006	2713
0030	0842 C	32495		2527	14818	0082	00013	2715
0050	0840 C	32491		2527	14820	0136	00035	2719
0075	0829 C	32513		2530	14820	0204	00079	2691
0100	0757 B	3278 B		2561	14800	0269	00136	2399
0125	0647 B	33185		2608	14766	0323	00198	1954
0150	0662 B	3355 B		2635	14781	0369	00263	1705
0175	0674 B	3380 B		2653	14793	0410	00330	1536
0200	0659 C	33871		2661	14792	0448	00403	1468
0225	0631 B	3391 B		2667	14786	0484	00482	1408
0250	0601	33922		2672	14778	0519	00567	1363
0300	0561	33946		2679	14770	0586	00757	1302
0400	0501	34024		2692	14763	0712	01204	1183
0500	0458	34107		2704	14763	0826	01730	1082

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0422	34178		2713	14766	0931	02322	0998
*0700	0392 B	34240		2721	14771	1028	02970	0927
0800	0365 B	34300		2729	14776	1119	03664	0859
1000	0317 C	34400		2741	14791	1281	05156	0746
1200	0278	34463		2750	14809	1424	06772	0669

C-REF-NO 001 YR 1963 DEPTH WAVES 1 00X0 AIR T 05.2 VIS
 CONS. NO 006 MONTH 1 MXSAMPD 15 WAVES 2 27XX WET B 05.2 STN 006
 LAT 49-230N DAY 17 NO.DPTH 19 WND-DIR CALM WW-CODE 41
 LON 134-400W HR 12.2 W-COLOR WND-SPD 00 CLD-TPE 7
 MARSD SQ 158 W-TRNSP BARO 1030. CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
122	0000	076 B	32448		2535	14781
122	0010	0779	32447		2532	14790
122	0020	0782 C	32450		2532	14792
122	0030	0781	32451		2532	14794
122	0050	0777 C	32451		2533	14795
122	0075	0779 C	32450		2533	14800
122	0100	0682	32816		2575	14771
122	0125	0589 B	33344		2628	14745
122	0150	0612 B	33693		2653	14763
122	0175	0604 B	33837		2665	14766
122	0200	0590 C	33866		2669	14765
122	0250	0527	33892		2679	14748
122	0300	0515	33931		2683	14751
122	0400	0444 C	33993		2696	14739
127	0499	0416	34090		2707	14745
127	0749	0350	34281		2729	14761
127	0998	0301	34383		2741	14783
127	1248	0263 C	34456		2751	14810
127	1497	0232	34519		2758	14839

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0760 B	32448		2535	14781	0000	00000	2633
0010	0779	32447		2532	14790	0027	00001	2660
0020	0782 C	32450		2532	14792	0053	00005	2664
0030	0781	32451		2532	14794	0080	00012	2663
0050	0777 C	32451		2533	14795	0134	00034	2660
0075	0779 C	32450		2533	14800	0201	00077	2668
0100	0682	32816		2575	14771	0263	00132	2270
0125	0589 B	33344		2628	14745	0314	00190	1764
0150	0612 B	33693		2653	14763	0355	00248	1534
0175	0604 B	33837		2665	14766	0392	00310	1420
0200	0590 C	33866		2669	14765	0428	00378	1385
0225	0558 C	33881		2674	14756	0462	00453	1338
0250	0527	33892		2679	14747	0495	00534	1296
0300	0515	33931		2683	14751	0560	00715	1258
0400	0444 C	33993		2696	14739	0681	01148	1141
0500	0416	34091		2707	14745	0791	01656	1046

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0388	34177		2717	14751	0892	02226	0960
*0700	0362	34250		2725	14758	0986	02848	0885
0800	0339	34307		2732	14765	1072	03513	0825
1000	0301	34384		2741	14784	1231	04971	0740
1200	0270 C	34444		2749	14805	1374	06586	0674
1500	0232	34520		2758	14840	1566	09242	0591

C-REF-NO 001 YR 1963 DEPTH WAVES 1 17X1 AIR T 08.0 VIS 94
 CONS. NO 007 MONTH 1 MXSAMPD 34 WAVES 2 22XX WET B 07.2 STN 007
 LAT 49-260N DAY 17 NO.DPTH 23 WND-DIR 170 WW-CODE 47
 LON 136-420W HR 19.5 W-COLOR WND-SPD 03 CLD-TPE
 MARSD SQ 158 W-TRNSP BARO 1030. CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
195	0000	075 B	32450		2537	14777
195	0010	0758 B	32449		2535	14781
195	0020	0758 C	32450		2536	14783
195	0030	0758 C	32449		2535	14785
195	0050	0750 C	32459		2537	14785
195	0074	0744 C	32464		2539	14787
195	0099	0604 B	32891		2591	14741
195	0124	0544 B	33302		2630	14726
195	0148	0581 B	33655		2654	14750
195	0173	0603	33841		2666	14765
195	0198	0588 C	33867		2669	14763
195	0247	0511	33889		2680	14740
195	0296	0464	33939		2690	14730
195	0395	0414	34010		2701	14726
202	0470	0407	34088		2708	14737
202	0698	0357	34246		2725	14755
202	0947	0306 B	34364		2739	14777
202	1189	0270	34440		2749	14803
202	1432	0238	34504		2757	14831
202	1920	0196	34587		2767	14896
202	2411	0170 B	34635		2772	14970
202	2908	0158	34659		2775	15050
202	3406	0156	34673		2776	15136

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0750 B	32450		2537	14777	0000	00000	2618
0010	0758 B	32449		2535	14781	0026	00001	2631
0020	0758 C	32450		2536	14783	0053	00005	2631
0030	0758 C	32449		2535	14785	0079	00012	2633
0050	0750 C	32459		2537	14785	0132	00034	2618
0075	0739 C	3248 B		2540	14785	0198	00076	2593
0100	0600 B	32908		2592	14739	0257	00128	2100
0125	0545 B	33319		2631	14727	0305	00183	1731
0150	0584 B	33676		2655	14751	0346	00240	1512
0175	0603	33846		2666	14765	0383	00302	1412
0200	0585 C	33868		2670	14763	0418	00369	1377
0225	0548 C	3388 B		2675	14752	0452	00443	1326

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0250	0507	33892		2681	14739	0485	00523	1273
0300	0461	33942		2690	14729	0547	00698	1189
0400	0413	34015		2701	14727	0662	01109	1091
0500	0402	34114		2710	14740	0768	01598	1014
0600	0381	3419 B		2718	14749	0867	02156	0944
0700	0357	34247		2725	14756	0959	02770	0881
0800	0335	34300		2732	14764	1046	03435	0826
1000	0297 B	34383		2742	14782	1204	04891	0737
1200	0268	34443		2749	14804	1347	06501	0673
1500	0231	34518		2758	14839	1539	09154	0590
2000	0191	34597		2768	14908	1818	14135	0508
2500	0167 B	34641		2773	14984	2065	19854	0464
3000	0156	34665		2776	15066	2298	26455	0447

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 18X1	AIR T 06.1	VIS
CONS. NO 008	MONTH 1	MXSAMPD 15		WAVES 2 22XX	WET B 05.5	STN 008
LAT 49-330N	DAY 18	NO.DPTH 19		WND-DIR 180	WW-CODE 11	
LON 138-400W	HR 03.4	W-COLOR		WND-SPD 05	CLD-TPE 7	
MARSD SQ 158		W-TRNSP		BARO 1028.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
034	0000	072 B	32475		2543	14765
034	0010	0711	32474		2544	14763
034	0020	0712 C	32474		2544	14765
034	0030	0712 C	32473		2544	14767
034	0050	0710 C	32474		2544	14769
034	0075	0711 C	32474		2544	14774
034	0100	0624 B	32843		2584	14748
034	0125	0538 B	33353		2635	14724
034	0150	0548 B	33627		2655	14736
034	0175	0559	33774		2666	14747
034	0200	0540 C	33826		2672	14744
034	0250	0475	33853		2682	14726
034	0300	0439 B	33890		2689	14719
034	0400	0401	33987		2700	14721
039	0495	0387	34103		2711	14733
039	0745	0342	34275		2729	14757
039	0995	0297 B	34380		2742	14781
039	1245	0262	34455		2751	14809
039	1495	0231	34516		2758	14839

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0720 B	32475		2543	14765	0000	00000	2560
0010	0711	32474		2544	14763	0026	00001	2550
0020	0712 C	32474		2544	14765	0051	00005	2553
0030	0712 C	32473		2544	14767	0077	00012	2555
0050	0710 C	32474		2544	14769	0128	00033	2554
0075	0711 C	32474		2544	14774	0193	00074	2559
0100	0624 B	32843		2584	14748	0252	00127	2177
0125	0538 B	33353		2635	14724	0301	00183	1698
0150	0548 B	33627		2655	14736	0342	00239	1507
0175	0559	33774		2666	14747	0378	00300	1413
0200	0540 C	33826		2672	14744	0413	00367	1355
0225	0508 C	3385 C		2677	14735	0447	00440	1306
0250	0475	33853		2682	14726	0479	00519	1266
0300	0439 B	33890		2689	14719	0541	00695	1203
0400	0401	33987		2700	14721	0658	01110	1099
0500	0386	34108		2711	14733	0764	01598	1001

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0369	3419 C		2720	14743	0861	02147	0929
*0700	0351	3425 B		2726	14753	0952	02753	0870
0800	0332	34302		2732	14762	1038	03411	0821
1000	0296 B	34382		2742	14782	1195	04862	0737
1200	0268	34443		2749	14804	1338	06471	0672
1500	0230	34517		2758	14839	1530	09125	0591

C-REF-NO 001 YR 1963 DEPTH WAVES 1 14X3 AIR T 07.7 VIS 97
 CONS. NO 009 MONTH 1 MXSAMPD 15 WAVES 2 21XX WET B 07.1 STN 009
 LAT 49-410N DAY 18 NO.DPTH 19 WND-DIR 140 WW-CODE 03
 LON 140-400W HR 11.3 W-COLOR WND-SPD 11 CLD-TPE 6
 MARSD SQ 159 W-TRNSP BARO 1027. CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
113	0000	070 B	32498		2547	14758
113	0010	0672 B	32491		2550	14748
113	0020	0671 C	32485		2550	14749
113	0030	0672	32485		2550	14751
113	0050	0671 C	32489		2550	14754
113	0075	0671 C	32488		2550	14758
113	0100	0673	32491		2550	14763
113	0125	0484 B	33249		2633	14701
113	0150	0506 B	33650		2662	14719
113	0175	0506 B	33790		2673	14725
113	0200	0489 C	33841		2679	14723
113	0250	0434	33873		2688	14709
113	0300	0411	33897		2692	14708
113	0400	0387	34007		2703	14716
117	0500	0372	34127		2714	14727
117	0750	0336	34278		2730	14756
117	1000	0290 B	34391		2743	14779
117	1250	0260	34455		2751	14809
117	1500	0229	34512		2758	14838

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0700 B	32498		2547	14758	0000	00000	2517
0010	0672 B	32491		2550	14748	0025	00001	2488
0020	0671 C	32485		2550	14749	0050	00005	2493
0030	0672	32485		2550	14751	0075	00012	2495
0050	0671 C	32489		2550	14754	0126	00032	2494
0075	0671 C	32488		2550	14758	0188	00072	2497
0100	0673	32491		2550	14763	0251	00129	2501
0125	0484 B	33249		2633	14701	0304	00189	1716
0150	0506 B	33650		2662	14719	0344	00245	1442
0175	0506 B	33790		2673	14725	0379	00303	1340
0200	0489 C	33841		2679	14723	0412	00366	1285
0225	0461 B	3386 B		2684	14716	0444	00436	1240
0250	0434	33873		2688	14709	0475	00511	1206
0300	0411	33897		2692	14708	0535	00680	1168
0400	0387	34007		2703	14716	0648	01083	1069
0500	0372	34127		2714	14727	0751	01557	0972

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0358	3420 D		2722	14739	0846	02092	0909
0700	0344	3426 C		2727	14750	0935	02688	0859
0800	0327	34304		2733	14760	1020	03340	0814
1000	0290 B	34391		2743	14779	1175	04771	0723
1200	0265	34444		2749	14803	1316	06361	0668
1500	0229	34512		2758	14838	1508	09013	0593

C-REF-NO 001 YR 1963 DEPTH WAVES 1 14X4 AIR T 08.1 VIS 94
 CONS. NO 010 MONTH 1 MXSAMPD 04 WAVES 2 16XX WET-B 07.3 STN 010
 LAT 49-520N DAY 18 NO.DPTH 14 WND-DIR 140 WW-CODE 10
 LON 142-400W HR 19.8 W-COLOR WND-SPD 10 CLD-TPE 7
 MARSD SQ 159 W-TRNSP BARO 1025. CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
198	0000	068 B	32499		2550	14750
198	0010	0658	32494		2552	14743
198	0020	0657 C	32493		2553	14744
198	0030	0658	32492		2552	14746
198	0050	0655 C	32490		2553	14748
198	0075	0640 C	32501		2555	14746
198	0100	0616 B	32533		2561	14741
198	0125	0435 B	33127		2628	14679
198	0150	0405 B	33521		2663	14675
198	0175	0436	33735		2677	14695
198	0200	0436 C	33784		2680	14700
198	0250	0412	33836		2687	14699
198	0300	0398	33893		2693	14702
198	0400	0376	33989		2703	14711

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0680 B	32499		2550	14750	0000	00000	2491
0010	0658	32494		2552	14743	0025	00001	2469
0020	0657 C	32493		2553	14744	0050	00005	2470
0030	0658	32492		2552	14746	0075	00011	2473
0050	0655 C	32490		2553	14748	0124	00032	2473
0075	0640 C	32501		2555	14746	0186	00072	2449
0100	0616 B	32533		2561	14741	0247	00126	2399
0125	0435 B	33127		2628	14679	0300	00186	1756
0150	0405 B	33521		2663	14675	0340	00242	1432
0175	0436	33735		2677	14695	0374	00299	1305
0200	0436 C	33784		2680	14700	0407	00361	1270
0225	0425 B	3381 B		2684	14700	0438	00430	1239
0250	0412	33836		2687	14699	0469	00506	1211
0300	0398	33893		2693	14702	0529	00674	1158
0400	0376	33989		2703	14711	0641	01076	1071

C-REF-NO 001 YR 1963 DEPTH WAVES 1 16X2 AIR T 07.2 VIS 93
 CONS. NO 011 MONTH 1 MXSAMPD 20 WAVES 2 18XX WET B 07.2 STN 000
 LAT 50-030N DAY 20 NO.DPTH 20 WND-DIR 160 WW-CODE 45
 LON 144-560W HR 19.4 W-COLOR WND-SPD 08 CLD-TPE
 MARSD SQ 195 W-TRNSP BARO 1026. CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
194	0000	066 B	32498		2553	14742
194	0010	0646	32504		2555	14738
194	0020	0646 C	32504		2555	14740
194	0030	0646	32502		2555	14741
194	0050	0644 C	32501		2555	14744
194	0075	0642 C	32517		2556	14747
194	0100	0561	32709		2581	14721
194	0125	0402 B	33219		2639	14666
194	0150	0390 B	33536		2666	14669
194	0175	0396 B	33668		2675	14678
194	0200	0400 C	33753		2682	14685
194	0250	0395	33837		2689	14692
194	0300	0383 B	33896		2695	14696
194	0400	0373	34009		2705	14710
199	0500	0364	34110		2714	14724
199	0750	0325	34300		2733	14751
199	1000	0290 B	34390		2743	14779
199	1250	0257	34455		2751	14808
199	1490	0234	34507		2757	14839
199	2000	0198	34573		2765	14911

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0660 B	32498		2553	14742	0000	00000	2467
0010	0646	32504		2555	14738	0025	00001	2447
0020	0646 C	32504		2555	14740	0049	00005	2448
0030	0646	32502		2555	14741	0074	00011	2451
0050	0644 C	32501		2555	14744	0123	00032	2451
0075	0642 C	32517		2556	14747	0185	00071	2440
0100	0561	32709		2581	14721	0243	00123	2203
0125	0402 B	33219		2639	14666	0292	00178	1653
0150	0390 B	33536		2666	14669	0330	00232	1405
0175	0396 B	33668		2675	14678	0365	00289	1314
0200	0400 C	33753		2682	14685	0397	00351	1257
0225	0399 B	3380 B		2686	14689	0428	00419	1220
0250	0395	33837		2689	14692	0459	00494	1193
0300	0383 B	33896		2695	14696	0517	00659	1140
0400	0373	34009		2705	14710	0628	01055	1053

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0364	34110		2714	14724	0731	01527	0976
0600	0350	34197		2722	14735	0826	02062	0903
0700	0334	34270		2729	14746	0914	02649	0840
0800	0318	34323		2735	14757	0996	03284	0790
1000	0290 B	34390		2743	14779	1149	04696	0724
1200	0263	34443		2750	14802	1290	06285	0666
1500	0232	34508		2757	14840	1483	08948	0599
2000	0198	34573		2765	14911	1771	14101	0534

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 16X2	AIR T 07.7	VIS 97
CONS. NO 012	MONTH 1	MXSAMPD	42	WAVES 2 18XX	WET B 07.2	STN 000
LAT 50-035N	DAY 22	NO.DPTH	6	WND-DIR 160	WW-CODE 02	
LON 144-550W	HR 19.3	W-COLOR		WND-SPD 09	CLD-TPE 6	
MARSD SQ 195		W-TRNSP		BARO 1020.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
193	1982	0195				
193	2475	0173	34632		2772	14982
193	2965	0160 B	34661		2775	15061
193	3464	0154	34675		2777	15146
193	3964	0151	34685		2778	15233
193	4164	0151	34690		2778	15268

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
2000	0194	3459 B		2767	14909	1767	14030	0519
2500	0172	34634		2772	14986	2021	19887	0475
3000	0159 B	34662		2775	15067	2258	26615	0454
3500	0154	34676		2777	15152	2489	34395	0451
4000	0151	34686		2778	15239	2721	43395	0453

C-REF-NO 001 YR 1963 DEPTH WAVES 1 12X5 AIR T 07.7 VIS 92
 CONS. NO 013 MONTH 1 MXSAMPD 04 WAVES 2 16XX WET B 07.7 STN 000
 LAT 50-040N DAY 25 NO.DPTH 14 WND-DIR 120 WW-CODE 47
 LON 145-105W HR 19.6 W-COLOR WND-SPD 12 CLD-TPE
 MARSD SQ 195 W-TRNSP BARO 1020. CLD-AMT 9 HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND

196	0000	067 B	32503		2552	14746
196	0010	0644	32503		2555	14737
196	0020	0644 C	32501		2555	14739
196	0030	0643	32509		2556	14740
196	0050	0638 C	32506		2556	14741
196	0075	0618 C	32515		2559	14737
196	0100	0597	32533		2563	14733
196	0125	0448 B	33097		2625	14684
196	0150	0379 B	33428		2658	14663
196	0175	0382 B	33605		2672	14671
196	0200	0391 C	33713		2679	14680
196	0250	0380	33792		2687	14685
196	0300	0366	33870		2694	14688
196	0400	0369	34006		2705	14708

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0670 B	32503		2552	14746	0000	00000	2476
0010	0644	32503		2555	14737	0025	00001	2445
0020	0644 C	32501		2555	14739	0049	00005	2448
0030	0643	32509		2556	14740	0074	00011	2442
0050	0638 C	32506		2556	14741	0123	00032	2440
0075	0618 C	32515		2559	14737	0184	00071	2412
0100	0597	32533		2563	14733	0244	00125	2377
0125	0448 B	33097		2625	14684	0297	00184	1792
0150	0379 B	33428		2658	14663	0338	00242	1476
0175	0382 B	33605		2672	14671	0374	00301	1348
0200	0391 C	33713		2679	14680	0407	00364	1277
0225	0388 B	3376 D		2684	14684	0438	00434	1238
0250	0380	33792		2687	14685	0469	00509	1211
0300	0366	33870		2694	14688	0529	00676	1142
0400	0369	34006		2705	14708	0639	01072	1051

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 26X2	AIR T	VIS 98
CONS. NO 014	MONTH 2	MXSAMPD 20		WAVES 2 10XX	WET B	STN 000
LAT 50-000N	DAY 01	NO.DPTH 20		WND-DIR 260	WW-CODE 02	
LON 145-000W	HR 19.9	W-COLOR 10		WND-SPD 02	CLD-TPE	
MARSD SQ 195		W-TRNSP 21		BARO 1005.	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
199	0000	064 B	32519	698 B	2557	14734
199	0010	0646	32509	696 B	2555	14738
199	0020	0646 C	32510	691 B	2555	14740
199	0030	0646 C	32507	698 B	2555	14741
199	0050	0645 C	32510	691 B	2555	14744
199	0075	0646 C	32505	697 B	2555	14749
199	0100	0552	32712	662 B	2583	14717
199	0125	0398 B	33261	581 B	2643	14665
199	0150	0384 B	33504	494 B	2664	14666
199	0175	0382 B	33675	393 B	2677	14672
199	0200	0383 C	33742	333 B	2683	14677
199	0250	0360	33827	241 B	2692	14677
199	0300	0370	33912	189 B	2697	14691
199	0400	0370	34040	138 B	2708	14709
204	0500	0360	34116	109 B	2715	14722
204	0750	0325	34299	073 B	2732	14751
204	1000	0289 B	34385	061 B	2743	14779
204	1250	0256	34459	061 B	2751	14807
204	1500	0226	34518	080 B	2759	14837
204	2000	0194	34587	136 B	2767	14909

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0640 B	32519	698 B	2557	14734	0000	00000	2427
0010	0646	32509	696 B	2555	14738	0024	00001	2443
0020	0646 C	32510	691 B	2555	14740	0049	00005	2443
0030	0646 C	32507	698 B	2555	14741	0074	00011	2447
0050	0645 C	32510	691 B	2555	14744	0123	00032	2446
0075	0646 C	32505	697 B	2555	14749	0185	00071	2454
0100	0552	32712	662 B	2583	14717	0243	00123	2191
0125	0398 B	33261	581 B	2643	14665	0291	00178	1618
0150	0384 B	33504	494 B	2664	14666	0329	00231	1424
0175	0382 B	33675	393 B	2677	14672	0364	00288	1295
0200	0383 C	33742	333 B	2683	14677	0396	00350	1248
0225	0372 C	3379 B	282 B	2687	14677	0426	00417	1203
0250	0360	33827	241 B	2692	14677	0456	00490	1165
0300	0370	33912	189 B	2697	14691	0514	00652	1115
0400	0370	34040	138 B	2708	14709	0622	01038	1027

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0360	34116	109 B	2715	14722	0723	01502	0968
0600	0347	3420 B	090 B	2722	14734	0817	02035	0902
0700	0333	34267	077 B	2729	14746	0905	02622	0841
0800	0318	34321	069 B	2735	14757	0988	03258	0792
1000	0289 B	34385	061 B	2743	14779	1141	04674	0726
1200	0262	34445	060 B	2750	14801	1282	06263	0664
1500	0226	34518	080 B	2759	14837	1472	08889	0585
2000	0194	34587	136 B	2767	14909	1753	13908	0519

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 34X1	AIR T 00.8	VIS 93
CONS. NO 015	MONTH 2	MXSAMPD	04	WAVES 2 34XX	WET B 00.8	STN 000
LAT 50-000N	DAY 04	NO.DPTH	14	WND-DIR 340	WW-CODE 73	
LON 145-025W	HR 19.9	W-COLOR	10	WND-SPD 07	CLD-TPE 9	
MARSD SQ 195		W-TRNSP	18	BARO 987.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
199	0000	060 B	32459	679 B	2557	14717
199	0010	0631 C	32507	698 B	2557	14732
199	0020	0631 C	32510	700 B	2557	14734
199	0030	0634	32514	705 B	2557	14737
199	0050	0632 C	32517	697 B	2558	14739
199	0075	0633 C	32515	700 B	2557	14743
199	0100	0599	32588	677 B	2567	14735
199	0125	0408 B	33185	594 B	2636	14668
199	0150	0388 B	33393	543 B	2654	14667
199	0175	0388 B	33625	435 B	2673	14674
199	0200	0395 C	33740	353 B	2681	14682
199	0250	0372	33830	250 B	2691	14682
199	0300	0379	33909	202 B	2696	14694
199	0400	0370	34025	146 B	2706	14709

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0600 B	32459	679 B	2557	14717	0000	00000	2425
0010	0631 C	32507	698 B	2557	14732	0024	00001	2426
0020	0631 C	32510	700 B	2557	14734	0049	00005	2425
0030	0634	32514	705 B	2557	14737	0073	00011	2427
0050	0632 C	32517	697 B	2558	14739	0122	00031	2425
0075	0633 C	32515	700 B	2557	14743	0183	00070	2430
0100	0599	32588	677 B	2567	14735	0243	00124	2338
0125	0408 B	33185	594 B	2636	14668	0294	00182	1685
0150	0388 B	33393	543 B	2654	14666	0334	00238	1511
0175	0388 B	33625	435 B	2673	14674	0370	00298	1339
0200	0395 C	33740	353 B	2681	14682	0403	00361	1261
0225	0385 C	3380 D	293 B	2687	14683	0434	00428	1210
0250	0372	33830	250 B	2691	14682	0464	00502	1175
0300	0379	33909	202 B	2696	14694	0522	00665	1126
0400	0370	34025	146 B	2706	14709	0631	01056	1038

C-REF-NO 001 YR 1963 DEPTH WAVES 1 19X5 AIR T 07.1 VIS 98
 CONS. NO 016 MONTH 2 MXSARPO 20 WAVES 2 99XX WET B 04.9 STN C00
 LAT 49-575N DAY 08 NO. OPTH 20 WND-DIR 190 WW-CODE 01
 LON 144-590W HR 20.0 W-COLOR 10 WND-SPD 09 CLD-TPE 8
 MARSD SQ 159 W-TRNSP BARO 994. CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
200	0000	063 B	32514	693 B	2558	14730
200	0010	0596	32509	717 B	2561	14718
200	0020	0595 C	32505	717 B	2561	14719
200	0030	0594 C	32507	705 B	2561	14720
200	0050	0594 C	32508	699 B	2562	14724
200	0075	0597 C	32511	693 B	2561	14729
200	0100	0524 B	32736	662 B	2588	14706
200	0125	0390 B	33336	563 B	2650	14662
200	0150	0382 B	33612	448 B	2672	14667
200	0175	0388 C	33704	379 B	2679	14675
200	0200	0390 C	33767	329 B	2684	14681
200	0250	0373	33846	241 B	2692	14683
200	0300	0374	33920	192 B	2698	14692
200	0400	0370	34039	141 B	2707	14709
205	0500	0358	34124	109 B	2715	14721
205	0750	0327 B	34291	075 B	2732	14752
205	1000	0287 C	34398	058 B	2744	14778
205	1250	0256	34462	062 B	2752	14807
205	1500	0230	34519	076 B	2758	14839
205	2000	0193	34597	136 B	2768	14909

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0630 B	32514	693 B	2558	14730	0000	00000	2419
0010	0596	32509	717 B	2561	14718	0024	00001	2384
0020	0595 C	32505	717 B	2561	14719	0048	00005	2386
0030	0594 C	32507	705 B	2561	14720	0072	00011	2385
0050	0594 C	32508	699 B	2562	14724	0120	00031	2386
0075	0597 C	32511	693 B	2561	14729	0180	00069	2390
0100	0524 B	32736	662 B	2588	14706	0237	00120	2141
0125	0390 B	33336	563 B	2650	14662	0284	00173	1554
0150	0382 B	33612	448 B	2672	14667	0320	00224	1341
0175	0388 C	33704	379 B	2679	14675	0353	00279	1279
0200	0390 C	33767	329 B	2684	14681	0385	00340	1236
0225	0382 B	33811	282 B	2688	14682	0416	00407	1197
0250	0373	33846	241 B	2692	14683	0445	00479	1164
0300	0374	33920	192 B	2698	14692	0503	00641	1113
0400	0370	34039	141 B	2707	14709	0611	01027	1028

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0358	34124	109 B	2715	14721	0711	01489	0959
0600	0346	34198	090 B	2722	14734	0805	02019	0899
0700	0334 B	34263	078 B	2729	14746	0893	02607	0845
0800	0319 B	34317	070 B	2734	14757	0976	03246	0797
1000	0287 C	34398	058 B	2744	14778	1129	04654	0715
1200	0262	34451	060 B	2750	14801	1268	06224	0659
1500	0230	34519	076 B	2758	14839	1458	08849	0589
2000	0193	34597	136 B	2768	14909	1738	13839	0510

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 06X1	AIR T 05.7	VIS 94
CONS. NO 017	MONTH 2	MXSAMPD	42	WAVES 2 49XX	WET B 05.2	STN 000
LAT 49-590N	DAY 10	NO.DPTH	6	WND-DIR 060	WW-CODE 47	
LON 145-030W	HR 19.4	W-COLOR	10	WND-SPD 05	CLD-TPE	
MARSD SQ 159		W-TRNSP	19	BARO 1014.	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
194	2000	0194	34595	136	2767	14909
194	2500	0172	34634	216	2772	14986
194	3000	0158	34663	272	2776	15066
194	3500	0152	34677	305 B	2777	15151
194	4000	0150	34685	323	2778	15239
194	4200	0152	34687	326 B	2778	15275

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
2000	0194	34595	136	2767	14909	1738	13853	0513
2500	0172	34634	216	2772	14986	1990	19674	0475
3000	0158	34663	272	2776	15066	2226	26382	0451
3500	0152	34677	305 B	2777	15151	2456	34111	0447
4000	0150	34685	323	2778	15239	2687	43072	0452

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 04X1	AIR T 07.7	VIS 97
CONS. NO 018	MONTH 2	MXSAMPD	04	WAVES 2 07XX	WET B 07.7	STN 000
LAT 49-580N	DAY 12	NO.DPTH	14	WND-DIR 040	WW-CODE 63	
LON 145-030W	HR 18.9	W-COLOR		WND-SPD 05	CLD-TPE 5	
MARSD SQ 159		W-TRNSP		BARO 995.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
189	0000	064 B	32476	691 B	2553	14734
189	0010	0617	32492	696 B	2557	14726
189	0020	0616 C	32501	699 B	2558	14727
189	0030	0613 C	32508	694 B	2559	14728
189	0050	0608 C	32508	695 B	2560	14729
189	0075	0607 C	32509	694 B	2560	14733
189	0100	0572	32571	686 B	2569	14724
189	0125	0404 B	33185	603 B	2636	14666
189	0150	0385 B	33496	502 B	2663	14667
189	0175	0400 C	33661	405 B	2674	14679
189	0200	0400 C	33738	356 B	2681	14684
189	0250	0375	33820	263 B	2690	14683
189	0300	0368	33886	201 B	2695	14689
189	0400	0369	34010	148 B	2705	14708

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0640 B	32476	691 B	2553	14734	0000	00000	2459
0010	0617	32492	696 B	2557	14726	0025	00001	2421
0020	0616 C	32501	699 B	2558	14727	0049	00005	2414
0030	0613 C	32508	694 B	2559	14728	0073	00011	2406
0050	0608 C	32508	695 B	2560	14729	0122	00031	2403
0075	0607 C	32509	694 B	2560	14733	0182	00070	2404
0100	0572	32571	686 B	2569	14724	0241	00123	2319
0125	0404 B	33185	603 B	2636	14666	0292	00180	1681
0150	0385 B	33496	502 B	2663	14667	0331	00235	1431
0175	0400 C	33661	405 B	2674	14679	0366	00293	1323
0200	0400 C	33738	356 B	2681	14684	0398	00355	1268
0225	0388 B	3379 B	307 B	2686	14684	0430	00424	1222
0250	0375	33820	263 B	2690	14683	0460	00498	1185
0300	0368	33886	201 B	2695	14689	0518	00663	1132
0400	0369	34010	148 B	2705	14708	0629	01056	1048

C-REF-NO 001	YR 1963	DEPTH	WAVES 1 49X1	AIR T 06.6	VIS 98
CONS. NO 019	MONTH 2	MXSAMPD 20	WAVES 2 20XX	WET B 06.1	STN 000
LAT 50-000N	DAY 14	NO.DPTH 20	WND-DIR 990	WW-CODE 02	
LON 144-560W	HR 18.9	W-COLOR 10	WND-SPD 01	CLD-TPE 7	
MARSD SQ 195		W-TRNSP 18	BARO 1002.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
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189	0000	062 B	32487	623 B	2557	14726
189	0010	0602 C	32493	706 B	2559	14720
189	0020	0606	32514	699 B	2561	14724
189	0030	0604 C	32491	699 B	2559	14724
189	0050	0604	32505	699 B	2560	14728
189	0075	0606 C	32508	695 B	2560	14733
189	0100	0588	32563	686 B	2567	14730
189	0125	0404 B	33235	591 B	2640	14667
189	0150	0388 B	33513	497 B	2664	14668
189	0175	0388	33658	409 B	2675	14674
189	0200	0387 C	33732	343 B	2681	14679
189	0250	0382	33836	278 B	2690	14686
189	0300	0379	33909	193 B	2696	14694
189	0400	0369	34034	142 B	2707	14708
194	0500	0360	34119	104 B	2715	14722
194	0750	0325 B	34303	062 B	2733	14751
194	1000	0284 C	34400	055 B	2744	14777
194	1250	0252	34477	058 B	2753	14806
194	1500	0229	34521	080 B	2759	14839
194	2000	0191	34597	139 B	2768	14908

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0620 B	32487	623 B	2557	14726	0000	00000	2427
0010	0602 C	32493	706 B	2559	14720	0024	00001	2403
0020	0606	32514	699 B	2561	14724	0048	00005	2393
0030	0604 C	32491	699 B	2559	14724	0073	00011	2409
0050	0604	32505	699 B	2560	14728	0121	00031	2400
0075	0606 C	32508	695 B	2560	14733	0181	00070	2403
0100	0588	32563	686 B	2567	14730	0241	00123	2344
0125	0404 B	33235	591 B	2640	14667	0291	00180	1643
0150	0388 B	33513	497 B	2664	14668	0330	00234	1421
0175	0388	33658	409 B	2675	14674	0364	00291	1314
0200	0387 C	33732	343 B	2681	14679	0397	00354	1259
0225	0385 B	33790	306 B	2686	14683	0428	00422	1216
0250	0382	33836	278 B	2690	14686	0458	00495	1180
0300	0379	33909	193 B	2696	14694	0516	00659	1126
0400	0369	34034	142 B	2707	14708	0625	01048	1030

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0360	34119	104 B	2715	14722	0726	01512	0965
0600	0347	34200	081 B	2722	14734	0820	02043	0899
0700	0333 B	34271	066 B	2730	14746	0908	02628	0838
0800	0317 B	34327	059 B	2735	14756	0990	03261	0787
1000	0284 C	34400	055 B	2744	14777	1141	04655	0710
1200	0258	34464	056 B	2752	14800	1279	06203	0645
1500	0229	34521	080 B	2759	14839	1466	08797	0587
2000	0191	34597	139 B	2768	14908	1744	13764	0508

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 09X6	AIR T 06.6	VIS 96
CONS. NO 020	MONTH 2	MXSAMPD 04		WAVES 2 22XX	WET B 06.1	STN 000
LAT 50-020N	DAY 18	NO.DPTH 14		WND-DIR 090	WW-CODE 02	
LON 145-060W	HR 20.0	W-COLOR		WND-SPD 14	CLD-TPE 7	
MARSD SQ 195		W-TRNSP		BARO 998.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
200	0000	063 B	32488	706 B	2556	14730
200	0010	0604 C	32489	714 B	2559	14721
200	0019	0610	32490	716 B	2558	14725
200	0029	0610 C	32490	705 B	2558	14726
200	0049	0609	32490	702 B	2558	14729
200	0073	0608 C	32491	699 B	2559	14733
200	0098	0590 B	32512	698 B	2562	14730
200	0122	0427 B	33147	613 B	2631	14675
200	0147	0361 B	33389	531 B	2657	14655
200	0171	0365	33599	444 B	2673	14663
200	0196	0377 C	33678	340 B	2678	14673
200	0246	0367	33816	259 B	2690	14679
200	0295	0371	33902	199 B	2696	14690
200	0395	0363	34020	139 B	2707	14705

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0630 B	32488	706 B	2556	14730	0000	00000	2438
0010	0604 C	32489	714 B	2559	14721	0024	00001	2408
0020	0610	32490	715 B	2558	14725	0049	00005	2415
0030	0610 C	32490	705 B	2558	14727	0073	00011	2416
0050	0609	32490	702 B	2558	14729	0122	00031	2418
0075	0610 C	3248 D	701 B	2557	14734	0183	00070	2428
0100	0577 B	3256 F	692 B	2568	14726	0242	00124	2333
0125	0414 B	3319 D	603 B	2635	14671	0293	00181	1689
0150	0359 B	33419	521 B	2659	14655	0333	00237	1464
0175	0367	3362 B	426 B	2674	14665	0368	00295	1324
0200	0377 C	33690	330 B	2679	14674	0401	00358	1280
0225	0373 B	33763	281 C	2685	14677	0432	00427	1224
0250	0367	33824	253 B	2691	14680	0463	00501	1174
0300	0366 B	3392 C	194 B	2698	14689	0520	00663	1106
0400	0363	34022	138 B	2707	14706	0628	01049	1033

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 18X5	AIR T 07.7	VIS 95
CONS. NO 021	MONTH 2	MXSAMPD	04	WAVES 2 18XX	WET B 07.2	STN C00
LAT 49-440N	DAY 22	NO.DPTH	14	WND-DIR 180	WW-CODE 10	
LON 144-590W	HR 19.9	W-COLOR		WND-SPD 10	CLD-TPE 7	
MARSD SQ 159		W-TRNSP		BARO 995.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
199	0000	063 B	32483	706 B	2555	14730
199	0010	0610 C	32477	717 B	2557	14723
199	0020	0612	32483	712 B	2557	14726
199	0030	0611 C	32479	709 B	2557	14727
199	0050	0610	32490	698 B	2558	14730
199	0075	0597 C	32512	698 B	2562	14729
199	0100	0509 B	32722	662 B	2588	14700
199	0125	0390 B	33278	576 B	2645	14662
199	0150	0392 B	33503	504 B	2663	14670
199	0175	0415	33714	398 B	2677	14686
199	0200	0412 C	33765	338 B	2681	14690
199	0250	0390	33835	239 B	2689	14690
199	0300	0383 B	33890	220 B	2694	14696
199	0400	0375	34015	154 B	2705	14711

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0630 B	32483	706 B	2555	14730	0000	00000	2442
0010	0610 C	32477	717 B	2557	14723	0024	00001	2424
0020	0612	32483	712 B	2557	14726	0049	00005	2423
0030	0611 C	32479	709 B	2557	14727	0073	00011	2426
0050	0610	32490	698 B	2558	14730	0122	00031	2419
0075	0597 C	32512	698 B	2562	14729	0182	00070	2390
0100	0509 B	32722	662 B	2588	14700	0239	00121	2135
0125	0390 B	33278	576 B	2645	14662	0286	00174	1597
0150	0392 B	33503	504 B	2663	14670	0325	00228	1432
0175	0415	33714	398 B	2677	14686	0359	00285	1299
0200	0412 C	33765	338 B	2681	14690	0391	00347	1260
0225	0401 B	33804	282 B	2686	14690	0423	00415	1222
0250	0390	33835	239 B	2689	14690	0453	00489	1189
0300	0383 B	33890	220 B	2694	14696	0512	00655	1145
0400	0375	34015	154 B	2705	14711	0623	01051	1051

C-REF-NO 001 YR 1963 DEPTH WAVES 1 21X4 AIR T 08.3 VIS 99
 CONS. NO 022 MONTH 2 MXSAMPD 04 WAVES 2 49XX WET B 06.6 STN 000
 LAT 50-060N DAY 25 NO.DPTH 14 WND-DIR 210 WW-CODE 02
 LON 144-490W HR 19.9 W-COLOR WND-SPD 08 CLD-TPE 8
 MARSD SQ 195 W-TRNSP BARO 1007. CLD-AMT 4 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
199	0000	067 B	32487	709 B	2550	14746
199	0010	0608 C	32486	705 B	2558	14722
199	0020	0609	32484	705 B	2558	14724
199	0030	0608 C	32483	698 B	2558	14726
199	0050	0608	32489	699 B	2558	14729
199	0075	0608 C	32488	695 B	2558	14733
199	0100	0481	32921	656 B	2607	14691
199	0125	0390 B	33404	539 B	2655	14663
199	0150	0383 B	33642	419 B	2675	14668
199	0175	0388	33724	365 B	2681	14675
199	0200	0388 C	33782	301 B	2685	14680
199	0250	0368	33845	232 B	2692	14681
199	0300	0373	33923	188 B	2698	14692
199	0400	0369	34034	144 B	2707	14708

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0670 B	32487	709 B	2550	14746	0000	00000	2488
0010	0608 C	32486	705 B	2558	14722	0025	00001	2415
0020	0609	32484	705 B	2558	14724	0049	00005	2419
0030	0608 C	32483	698 B	2558	14726	0073	00011	2419
0050	0608	32489	699 B	2558	14729	0122	00031	2417
0075	0608 C	32488	695 B	2558	14733	0183	00070	2421
0100	0481	32921	656 B	2607	14691	0238	00119	1956
0125	0390 B	33404	539 B	2655	14663	0281	00168	1503
0150	0383 B	33642	419 B	2675	14668	0317	00218	1319
0175	0388	33724	365 B	2681	14675	0350	00272	1264
0200	0388 C	33782	301 B	2685	14680	0381	00333	1223
0225	0378 B	3382 B	260 B	2689	14680	0411	00399	1189
0250	0368	33845	232 B	2692	14681	0441	00471	1159
0300	0373	33923	188 B	2698	14692	0498	00632	1110
0400	0369	34034	144 B	2707	14708	0606	01019	1030

C-REF-NO 001	YR 1963	DEPTH		WAVES 1 16X2	AIR T 08.3	VIS 95
CONS. NO 023	MONTH 2	MXSAMPD	42	WAVES 2 49XX	WET-B 08.3	STN 000
LAT 49-580N	DAY 26	NO.DPTH	6	WND-DIR 160	WW-CODE 63	
LON 145-010W	HR 19.2	W-COLOR		WND-SPD 07	CLD-TPE 7	
MARSD SQ 159		W-TRNSP		BARO 1012.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
192	2000	0196	34591		2767	14910
192	2500	0173 B	34636		2772	14986
192	3000	0159	34661		2775	15067
192	3500	0152 B	34675		2777	15151
192	4000	0149	34682		2778	15238
192	4200	0151	34684		2778	15274

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
2000	0196	34591		2767	14910	1646	12789	0518
2500	0173 B	34636		2772	14986	1899	18638	0475
3000	0159	34661		2775	15067	2136	25367	0454
3500	0152 B	34675		2777	15151	2367	33132	0449
4000	0149	34682		2778	15238	2598	42112	0453

S E C T I O N I V

Bathythermograms

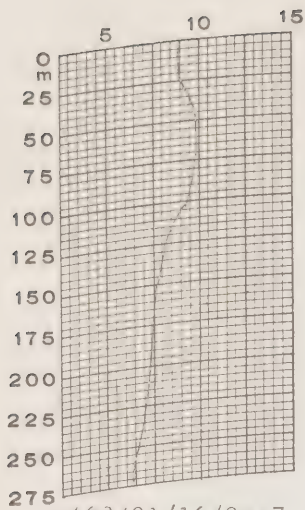
C.C.G.S. "ST. CATHARINES"

Daily bathythermograms

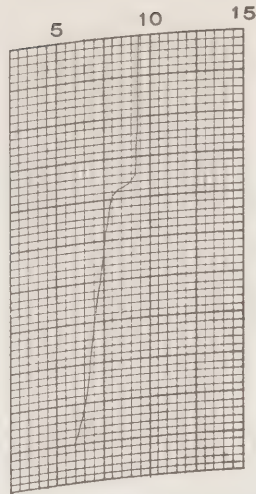
and

Ocean series bathythermograms

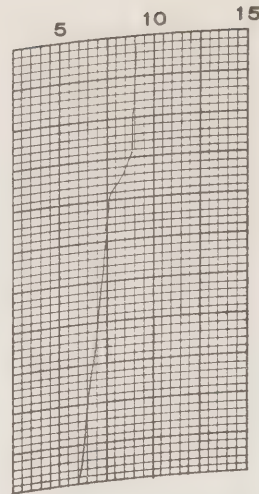
Survey P-63-1, C.C.G.S. "St. Catharines"



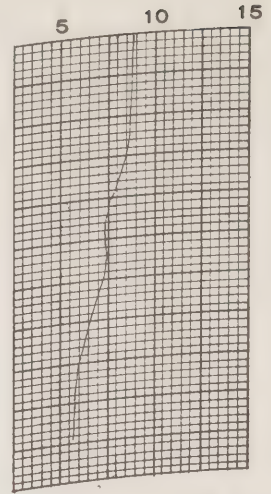
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48° 41' n
126° 40' w



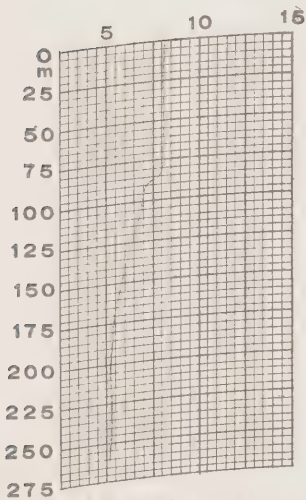
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48° 46' n
127° 40' w



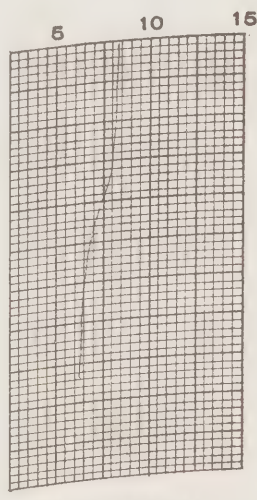
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48° 51' n
128° 40' w



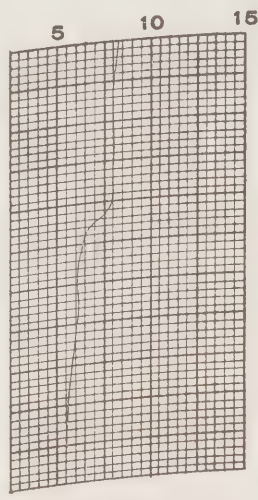
63/01/16/18.5
48° 56' n
129° 40' w



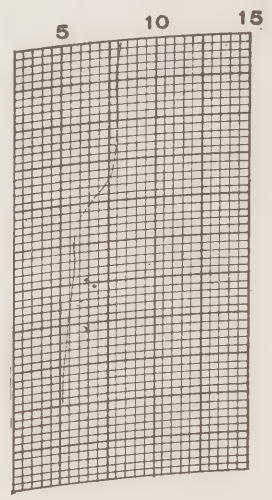
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49° 01' n
130° 40' w



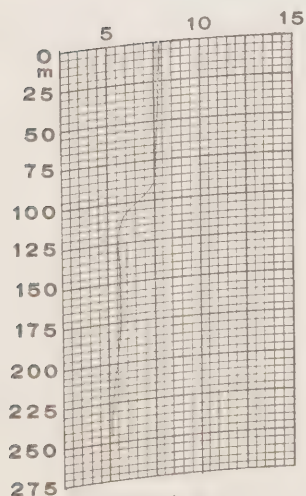
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49° 03' n
131° 40' w



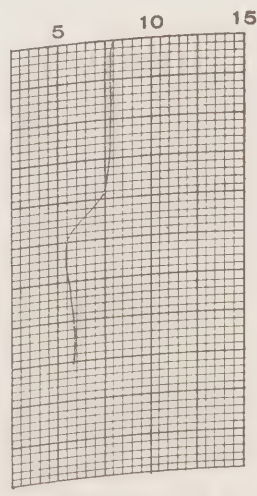
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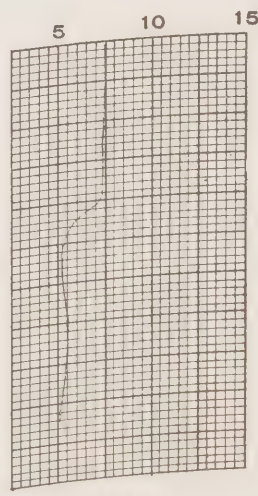
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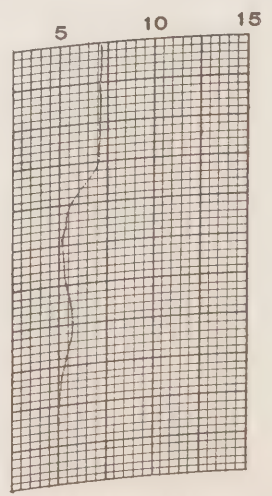
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134° 40' w



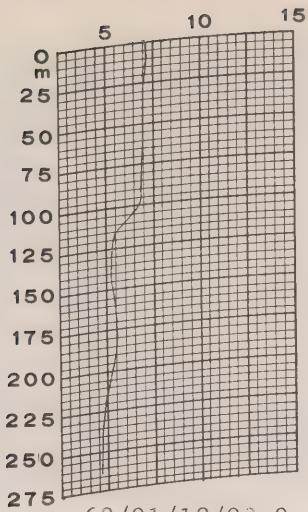
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135° 40' w



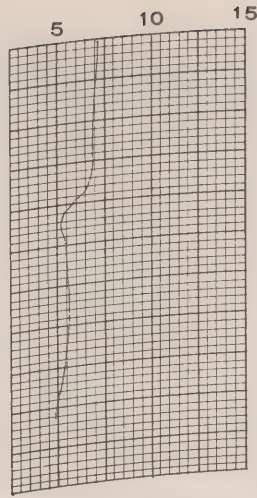
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136° 42' w



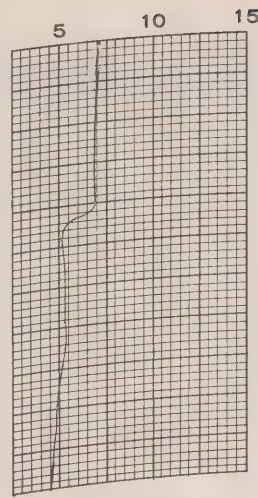
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137° 40' w



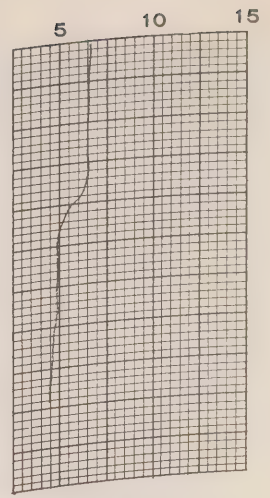
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138° 40' W



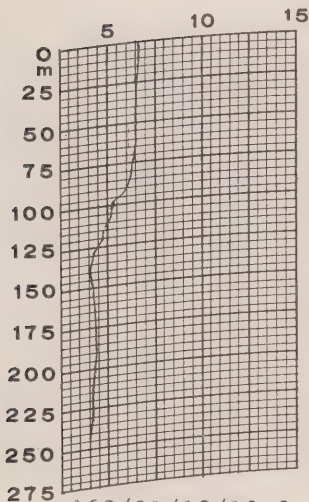
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49° 39' N
139° 40' W



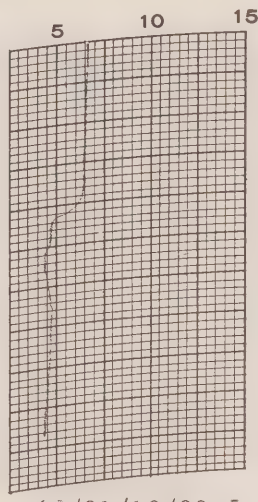
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49° 41' N
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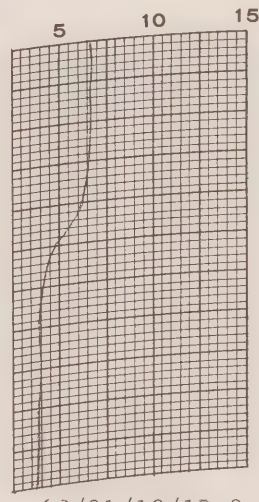
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141° 40' W



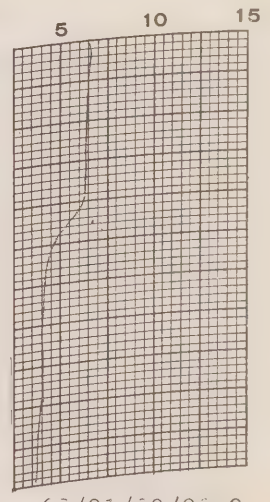
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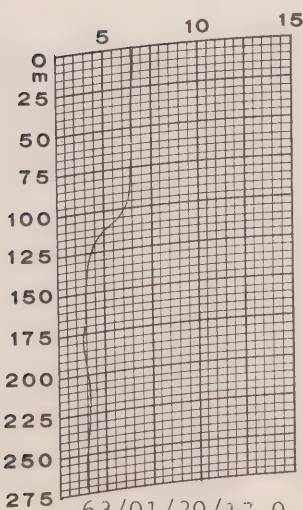
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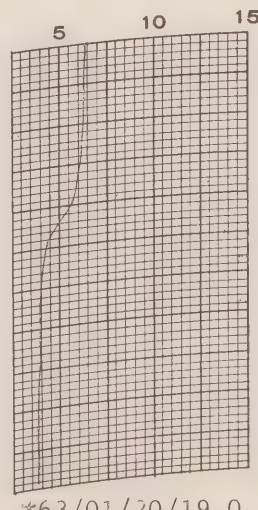
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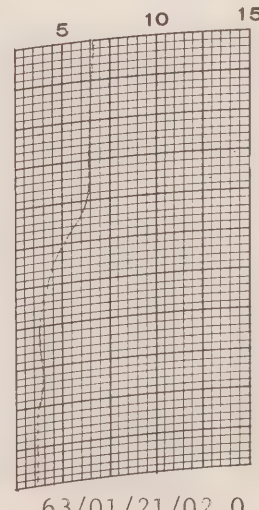
63/01/20/02.0
Grid OS



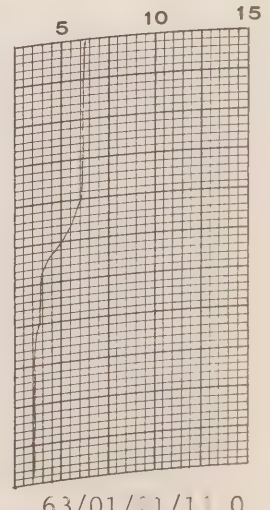
63/01/20/17.0
Grid OS



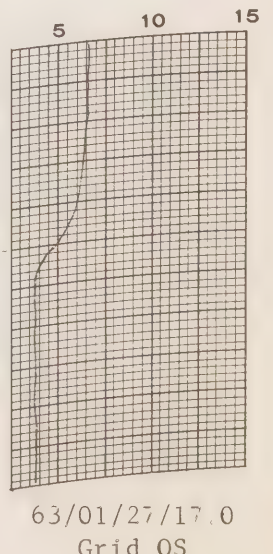
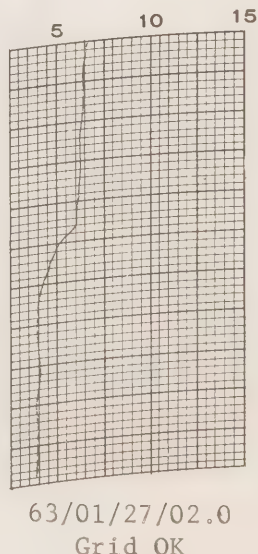
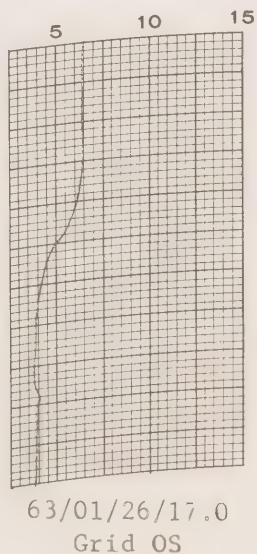
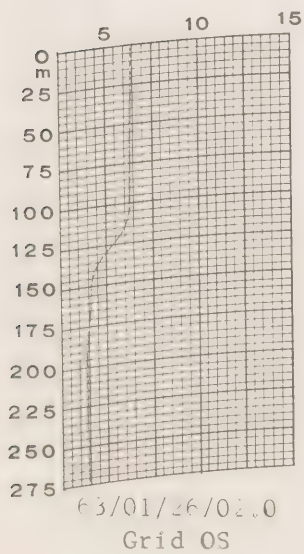
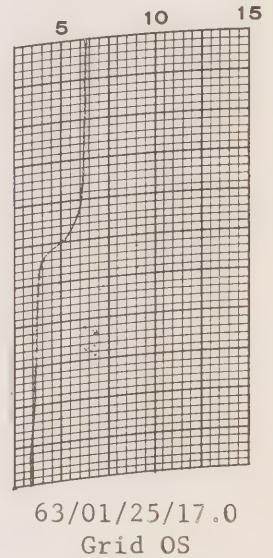
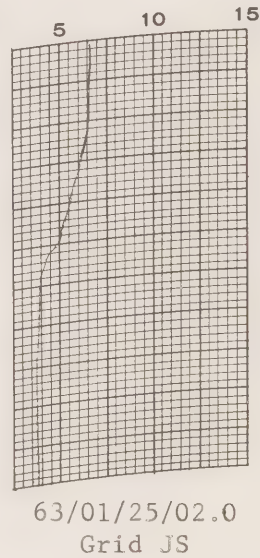
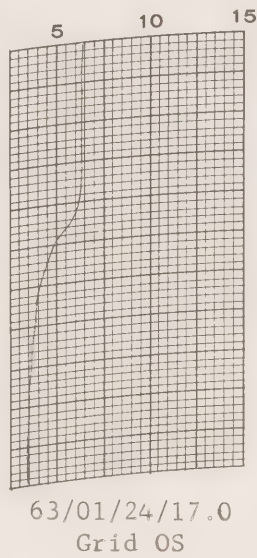
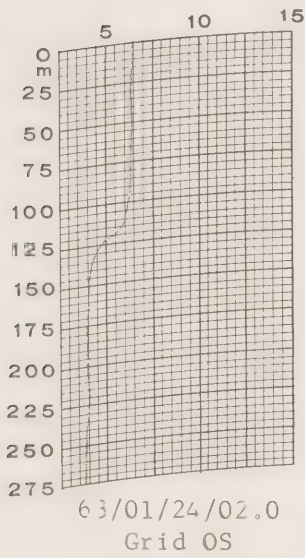
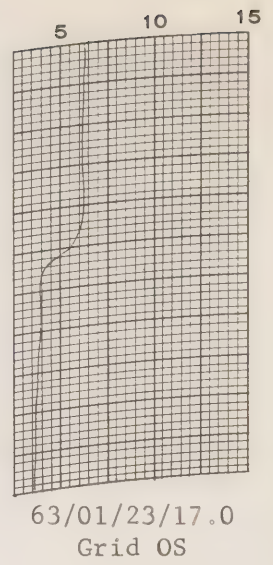
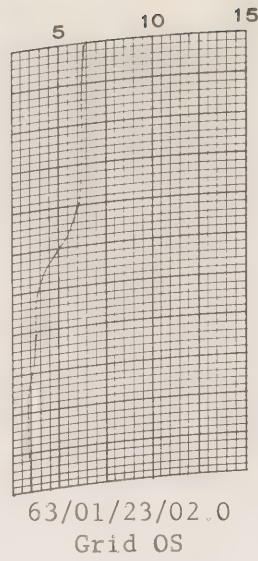
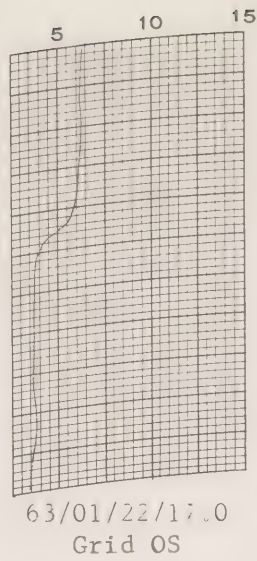
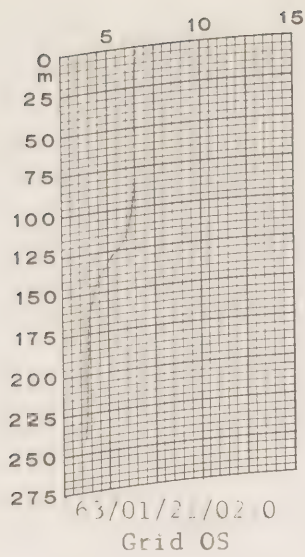
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Grid OS

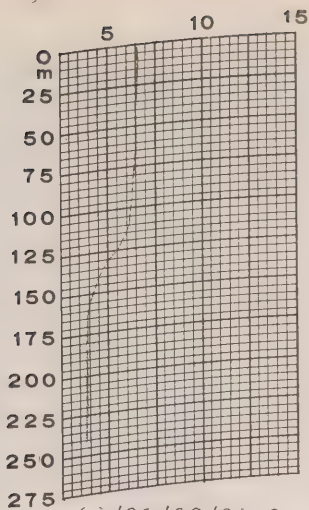


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Grid OS



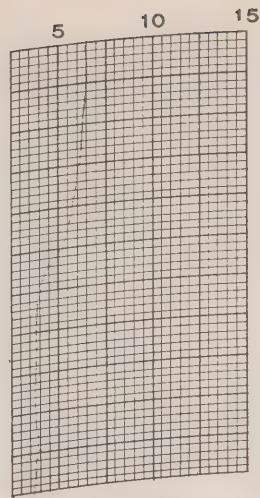
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Grid OS





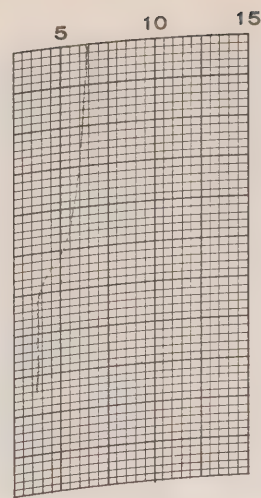
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Grid OS



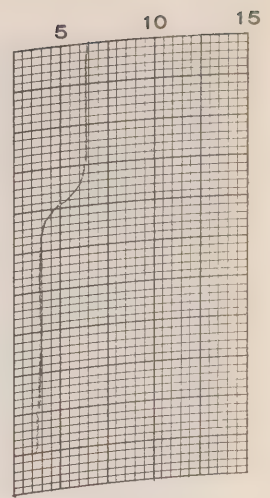
63/01/28/17.0

Grid OS



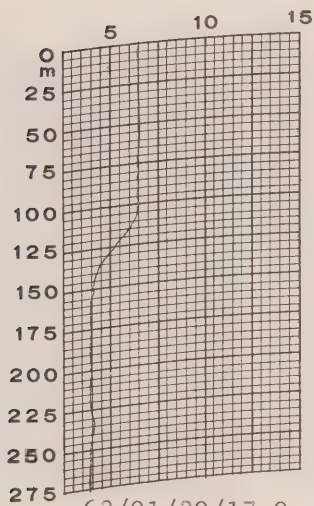
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Grid OS



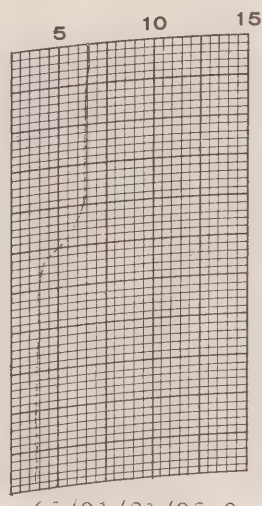
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Grid OS



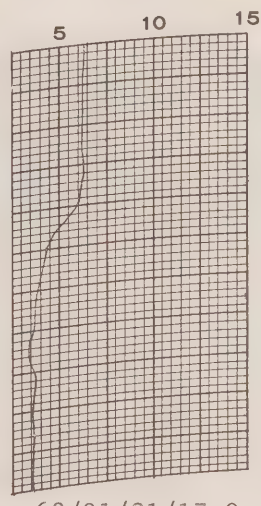
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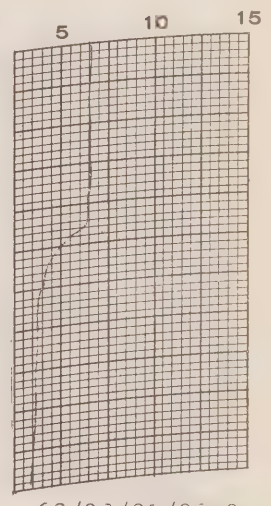
63/01/31/02.0

Grid OS



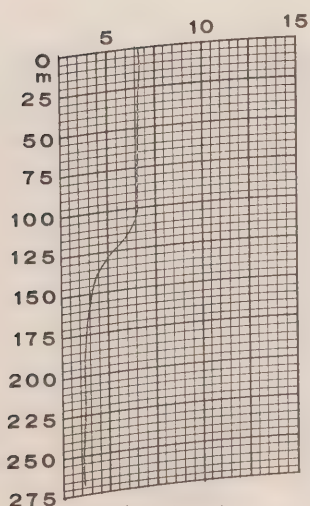
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Grid OS



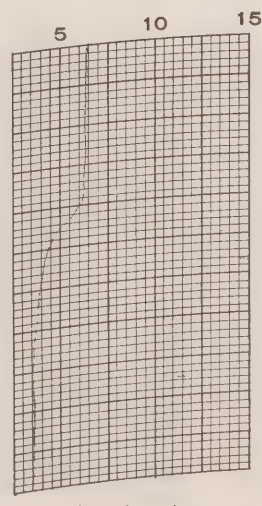
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Grid OS



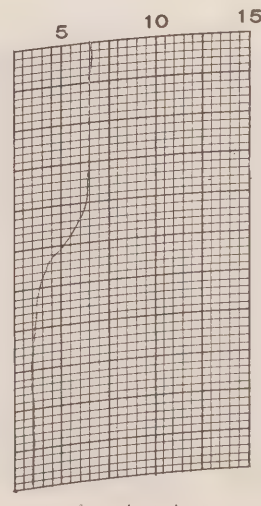
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Grid OS



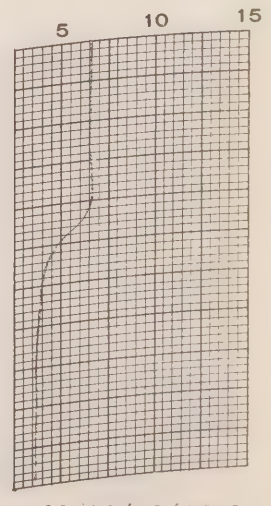
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Grid OS



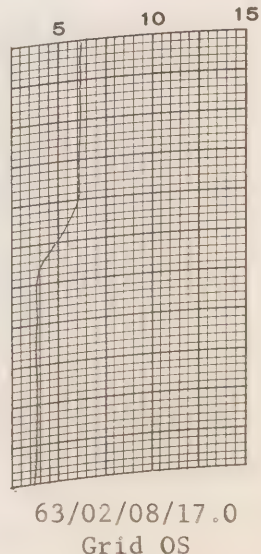
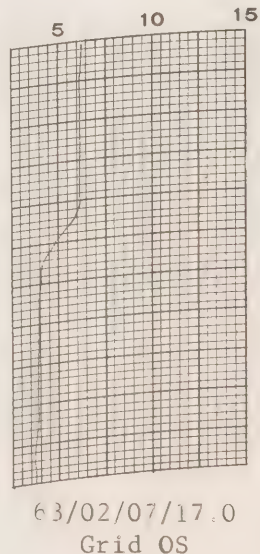
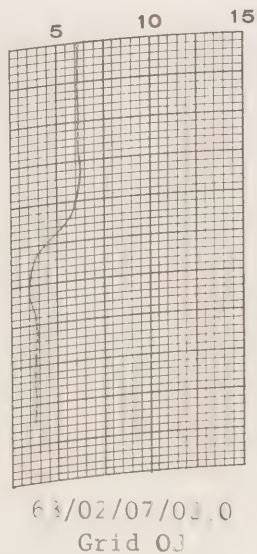
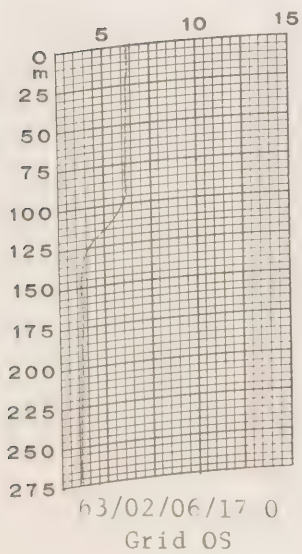
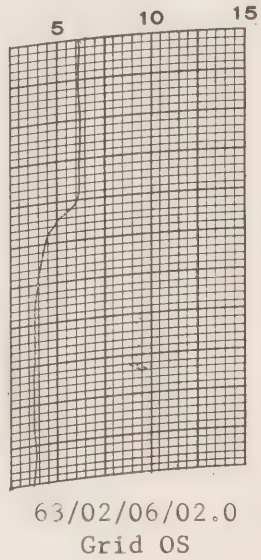
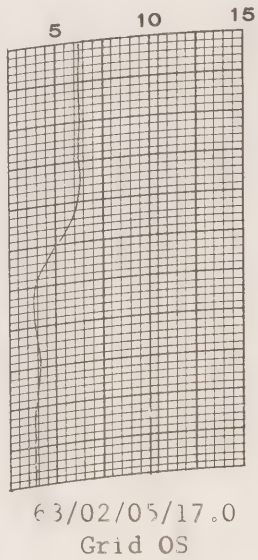
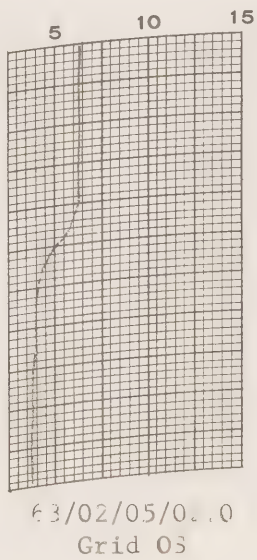
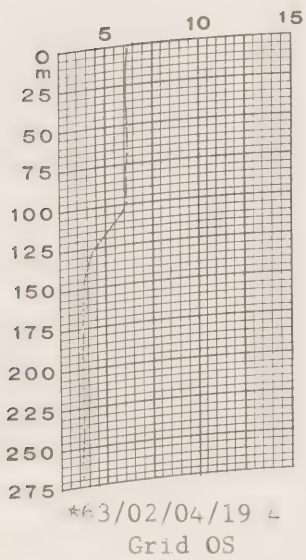
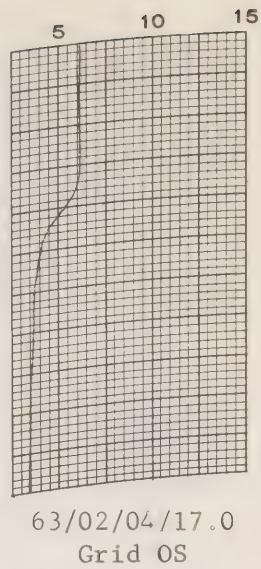
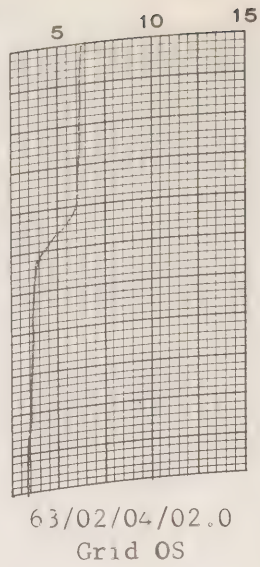
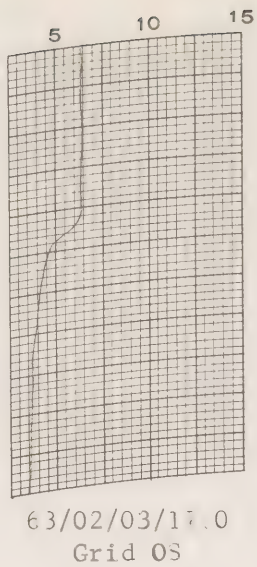
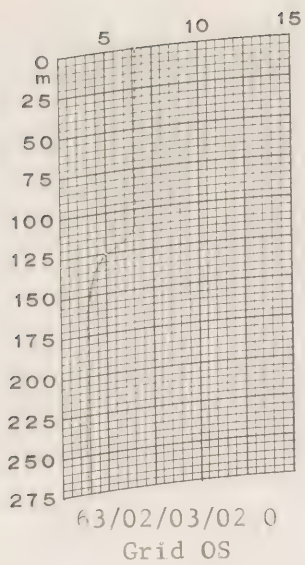
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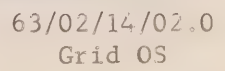
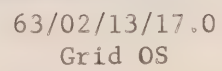
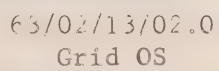
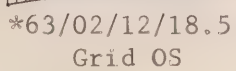
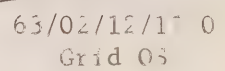
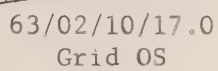
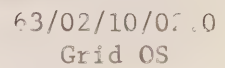
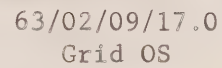
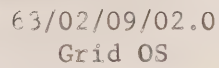
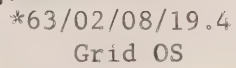
Grid OS

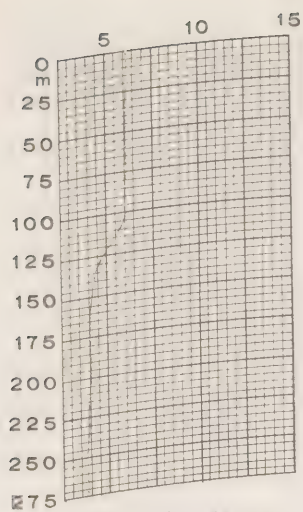


63/02/02/17.0

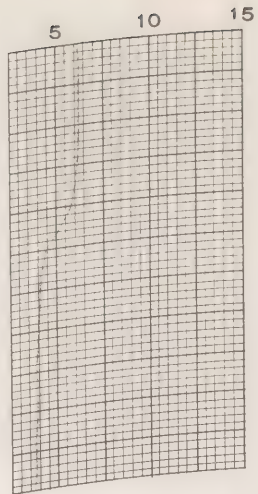
Grid OS



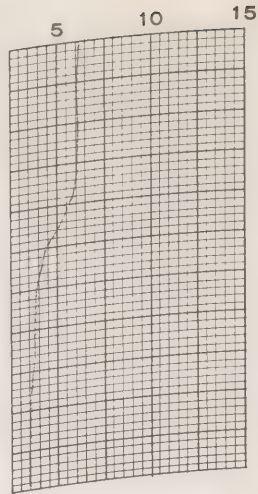




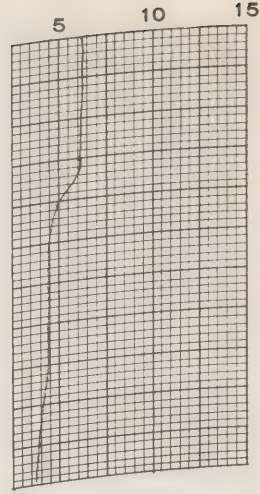
63/02/14/17.0
Grid OS



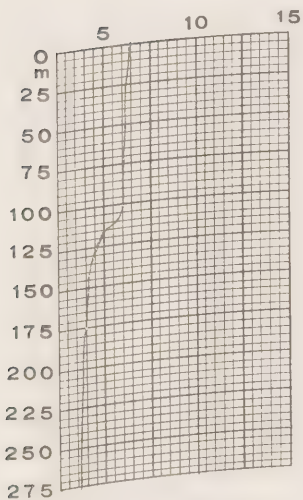
*63/02/14/18.5
Grid OS



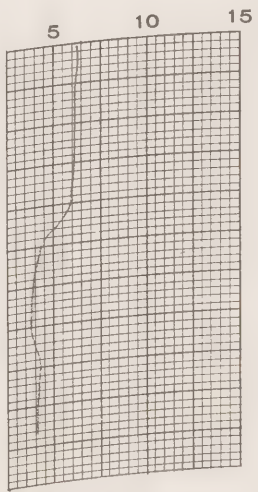
63/02/15/02.0
Grid OS



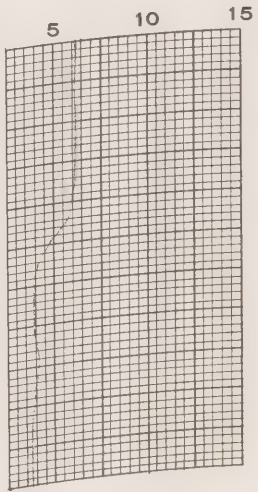
63/02/15/17.0
Grid OS



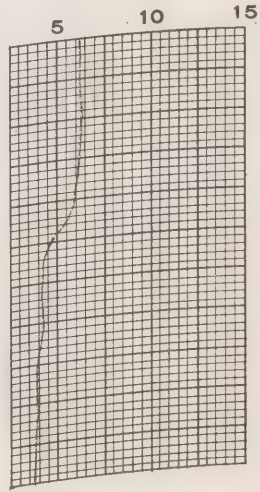
63/02/16/02.0
Grid 05



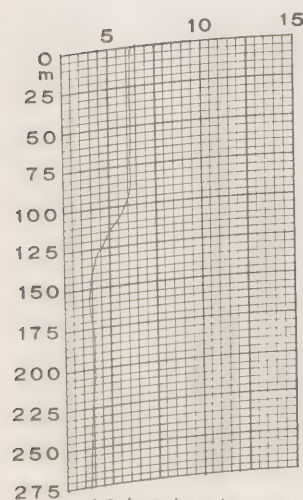
63/02/16/1.0
Grid OS



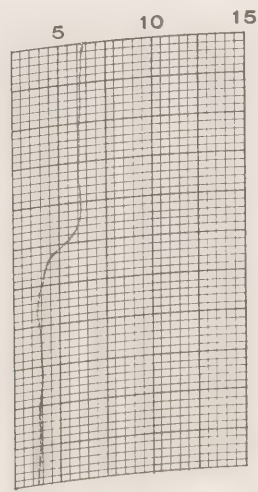
63/02/17/02.0
Grid OS



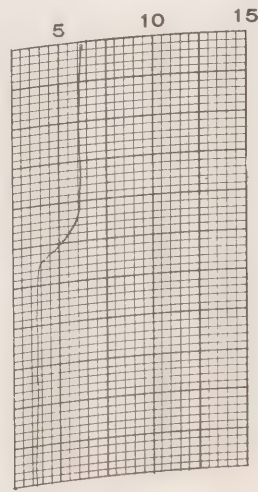
63/02/17/17.0
Grid OS



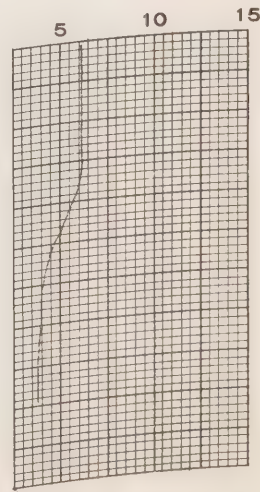
63/02/18/02 0
Grid OS



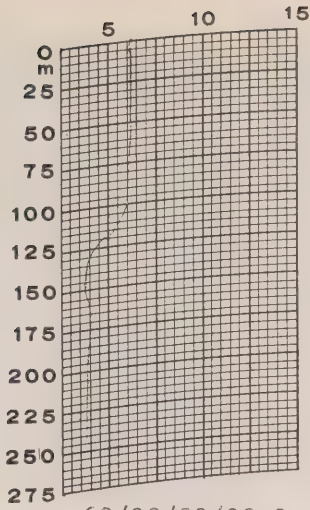
63/02/18/17 0
Grid OS



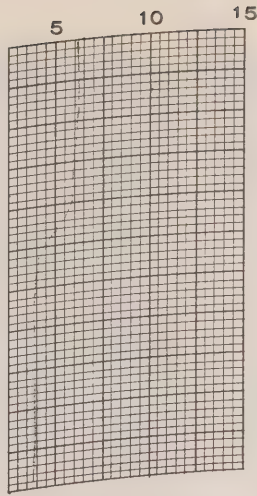
*63/02/18/19.5
Grid OS



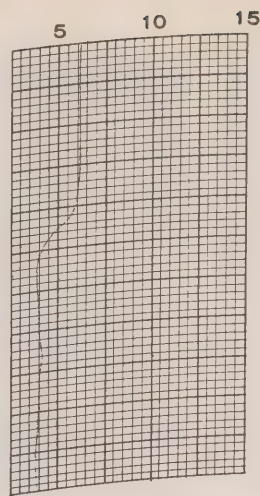
63/02/19/17.0
Grid OS



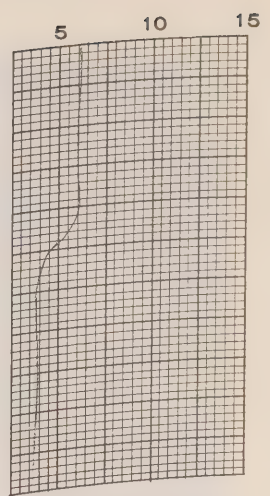
63/02/20/02.0
Grid KS



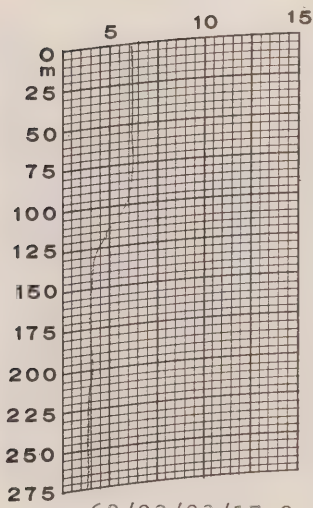
63/02/20/17.0
Grid OS



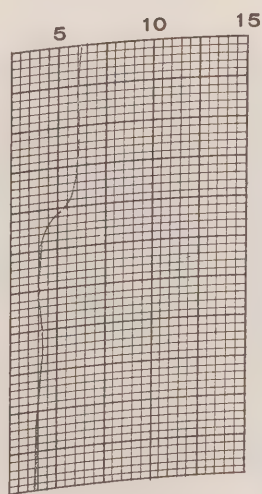
63/02/21/17.0
Grid OS



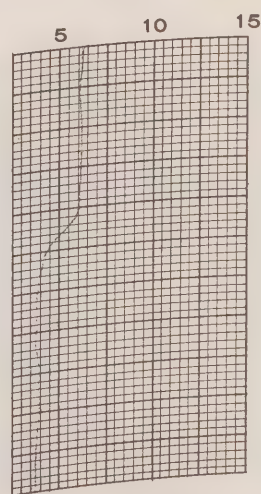
63/02/21/0.0
Grid OS



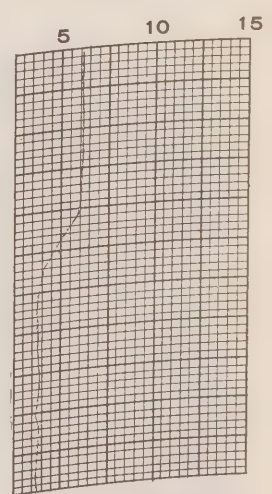
63/02/22/17.0
Grid KS



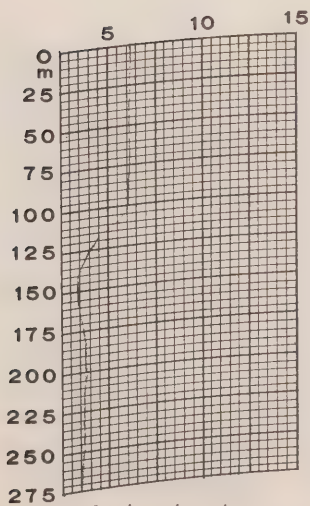
*63/02/22/19.4
Grid KS



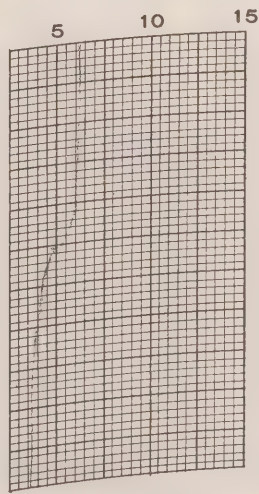
63/02/23/17.0
Grid OS



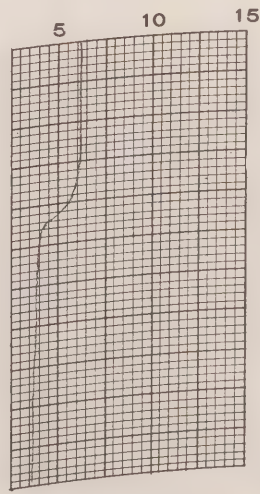
63/02/24/17.0
Grid OS



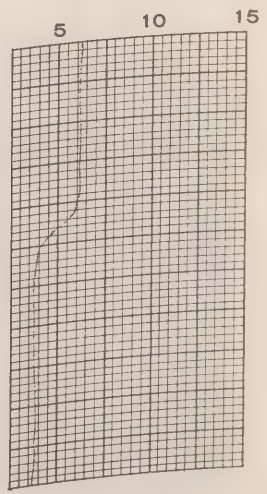
63/02/25/02.0
Grid OS



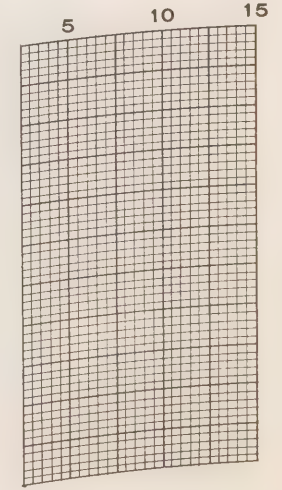
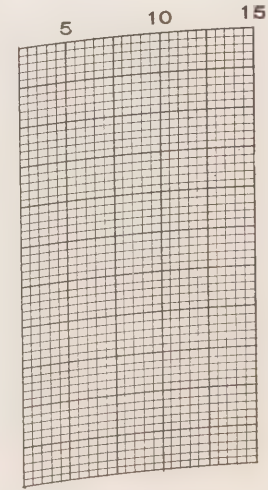
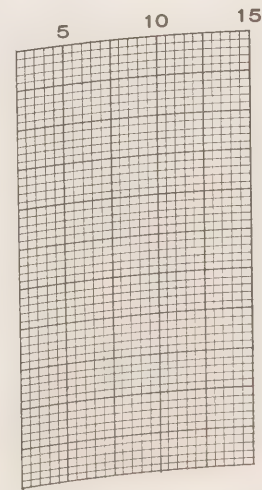
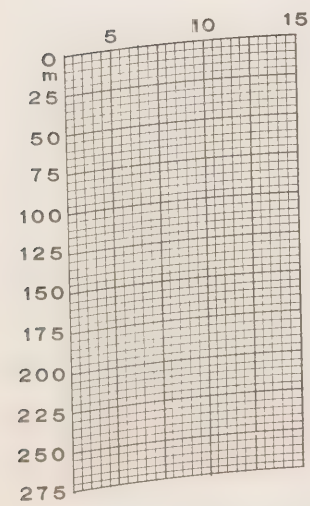
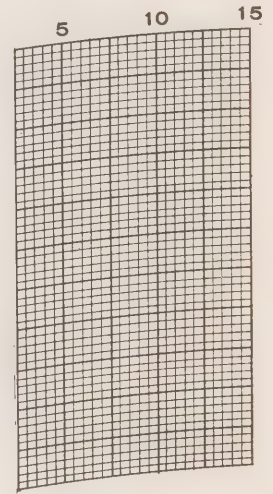
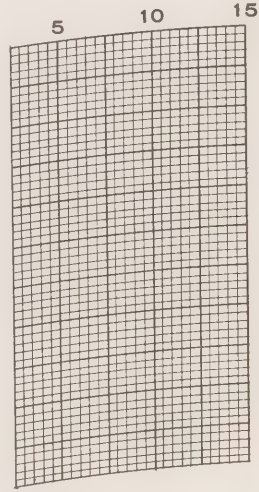
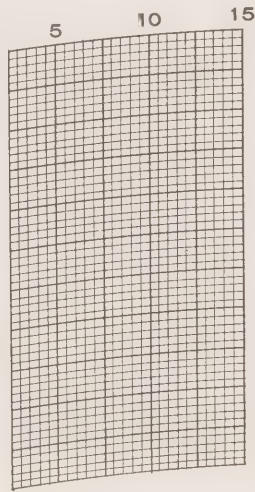
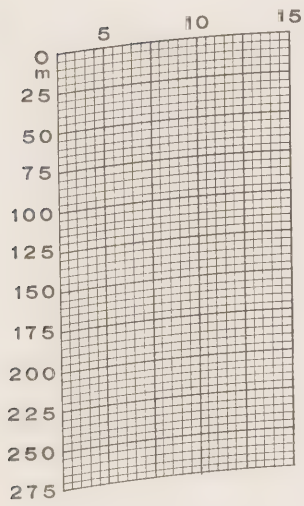
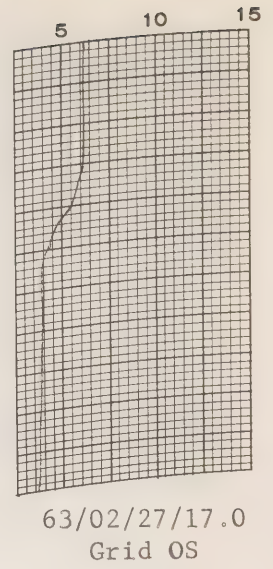
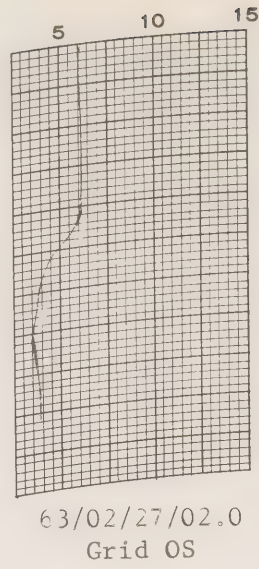
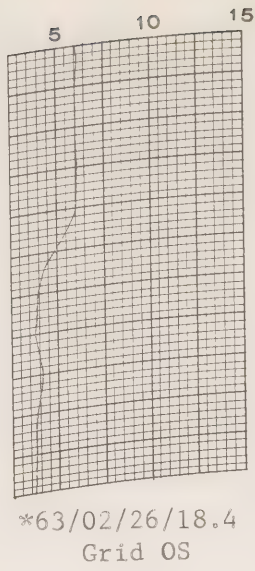
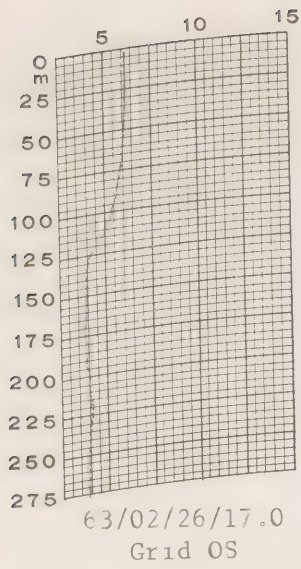
63/02/25/17.0
Grid OS



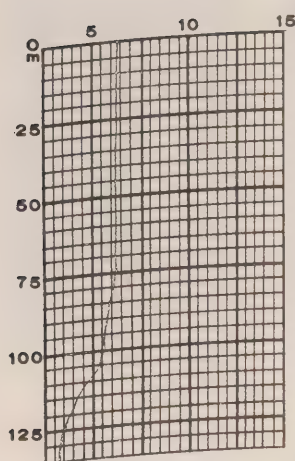
*63/02/25/19.3
Grid OS



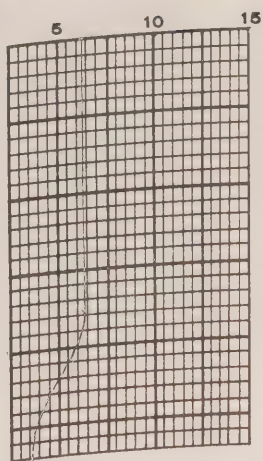
63/02/26/02.0
Grid OS



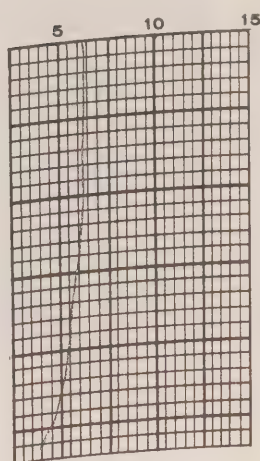
Survey P-63-1, C.C.G.S. "St. Catharines", OCEAN Series



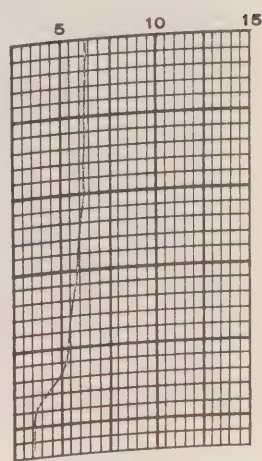
63/01/21/18.8
50° 03' n
145° 03' w



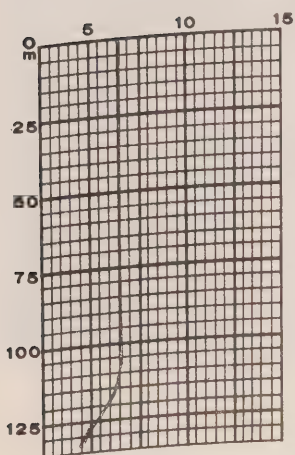
63/01/23/19.3
50° 02' n
145° 04' w



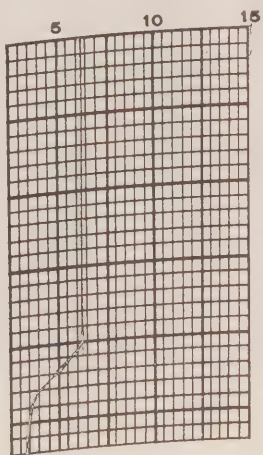
63/01/25/18.8
50° 03' n
145° 05' w



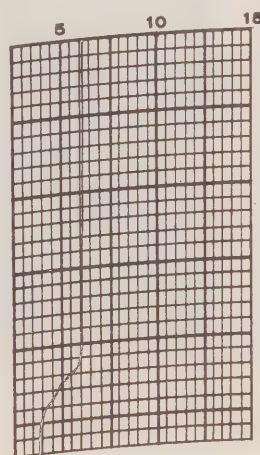
63/01/28/18.8
49° 59' n
145° 03' w



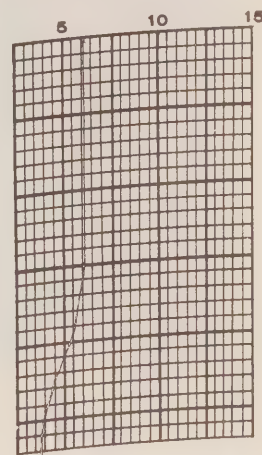
63/01/30/19.1
50° 02' n
144° 49' w



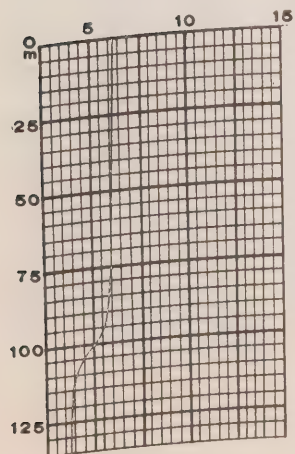
63/02/04/18.8
50° 00' n
145° 03' w



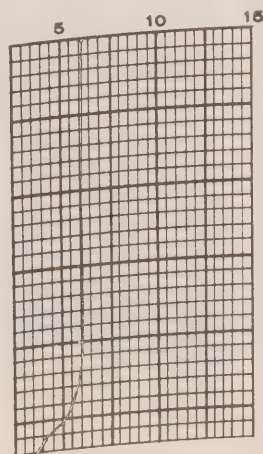
63/02/08/18.3
50° 01' n
145° 02' w



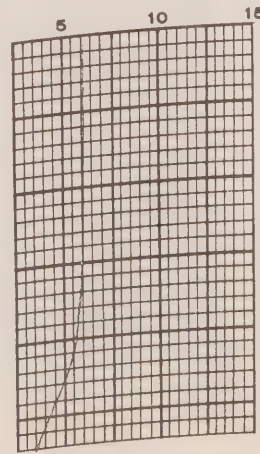
63/02/13/18.8
50° 02' n
145° 05' w



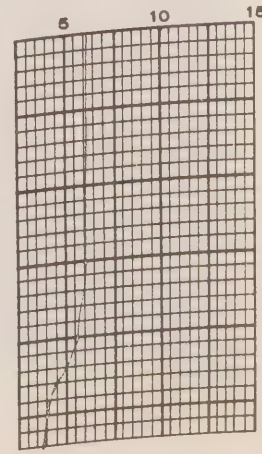
63/02/15/18.2
49° 59' n
144° 58' w



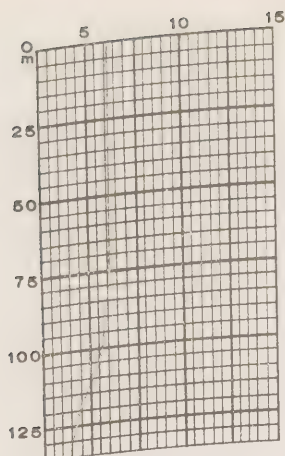
63/02/18/18.2
50° 00' n
145° 06' w



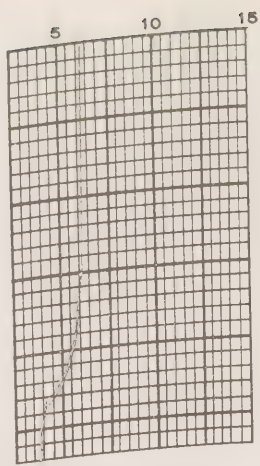
63/02/20/18.8
50° 02' n
145° 00' w



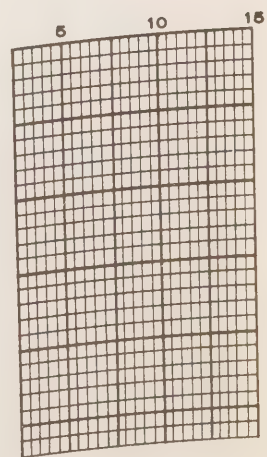
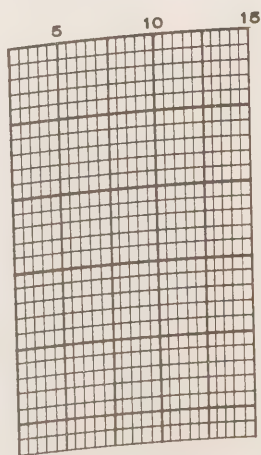
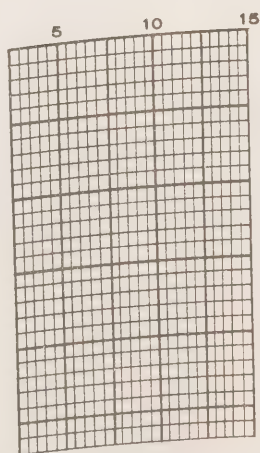
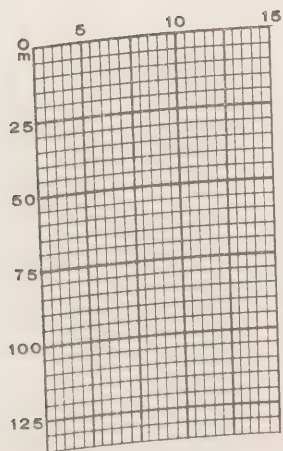
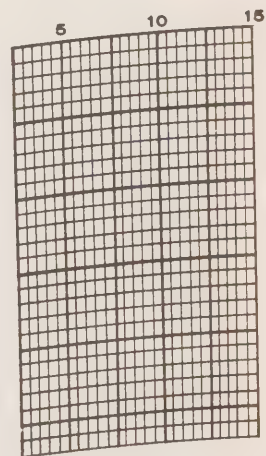
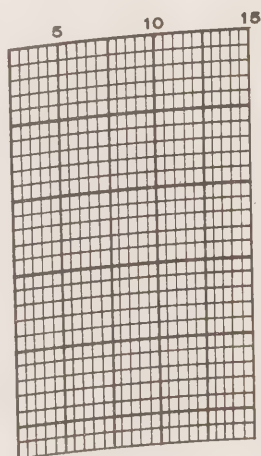
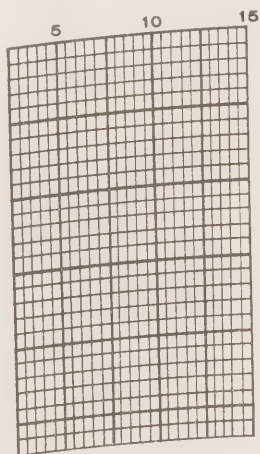
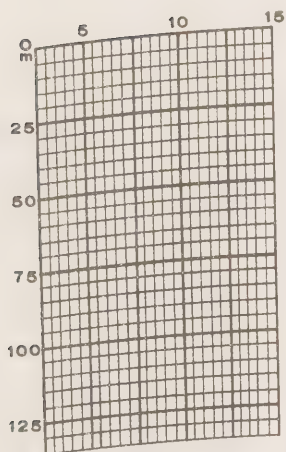
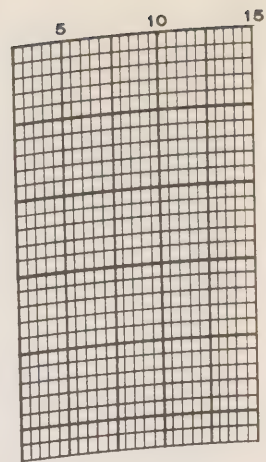
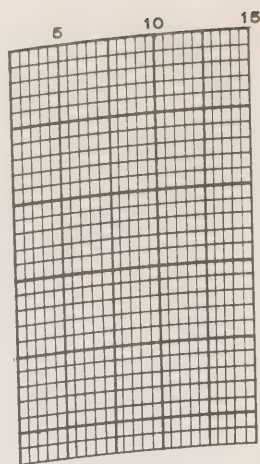
63/02/22/18.5
49° 47' n
145° 00' w



63/02/25/18.5
50° 03' N
144° 56' W



63/02/27/18.7
49° 38' N
144° 56' W



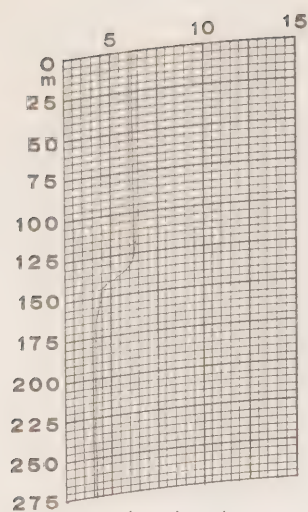
C.C.G.S. "STONETOWN" Patrol No. 55

Daily bathythermograms

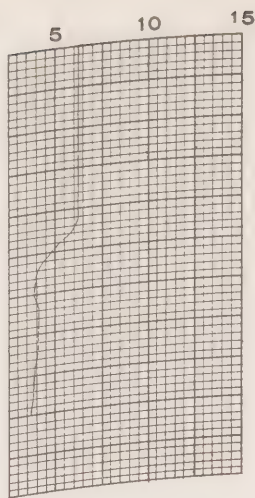
and

Ocean series bathythermograms

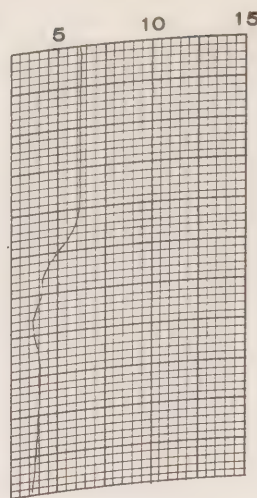
Patrol No. 55, C.C.G.S. "Stonetown"



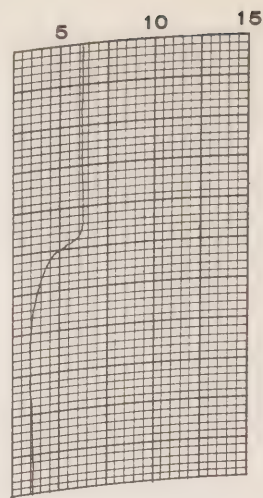
63/03/03/02.0
49° 55'n
144° 47'w



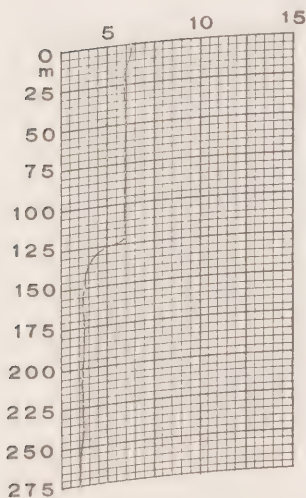
63/03/03/17.0
49° 48'n
144° 48'w



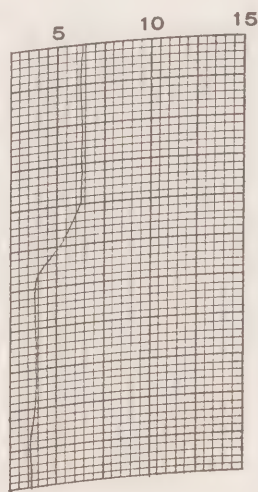
63/03/04/02.0
49° 47'n
144° 49'w



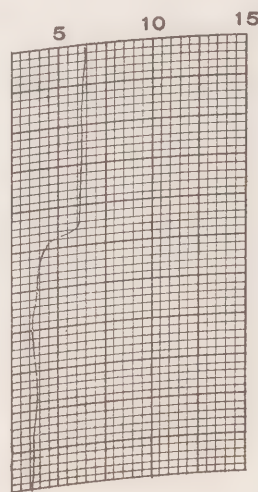
63/03/04/17.0
49° 57'n
145° 24'w



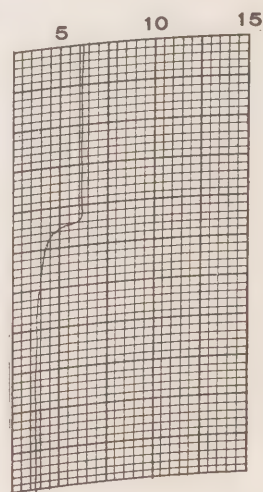
63/03/05/02.0
49° 52'n
145° 23'w



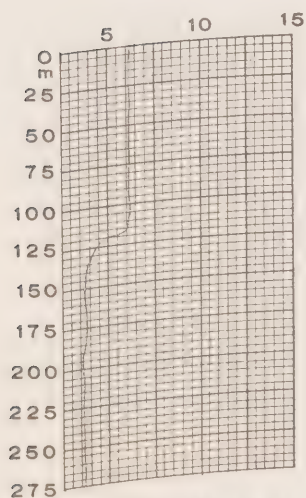
63/03/05/17.0
49° 57'n
145° 15'w



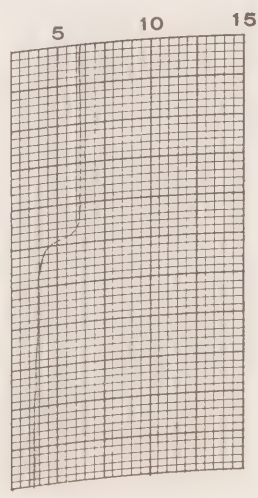
63/03/06/02.0
50° 05'n
145° 14'w



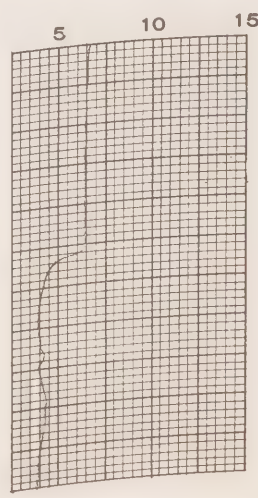
63/03/06/17.0
50° 05'n
145° 13'w



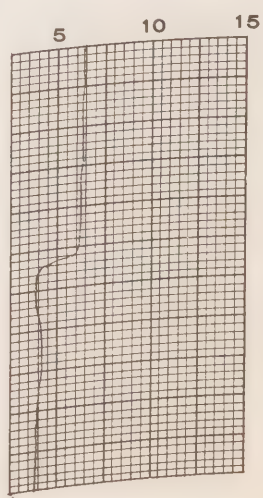
63/03/07/02.0
50° 10'n
145° 16'w



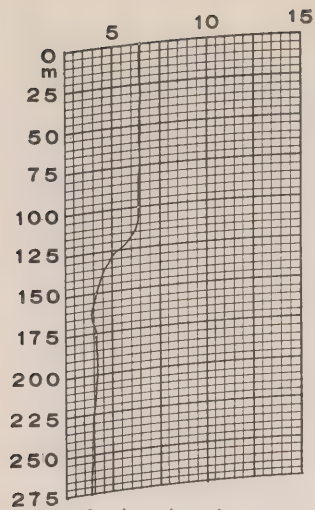
63/03/07/17.0
50° 08'n
145° 13'w



63/03/08/02.0
50° 00'n
145° 00'w



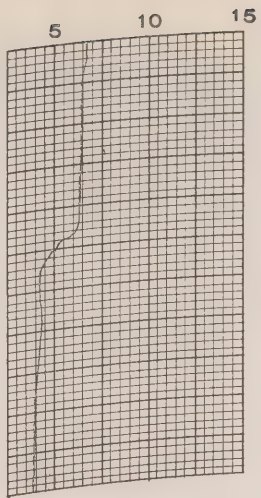
63/03/08/17.0
50° 00'n
145° 55'w



63/03/09/02.0

 $50^{\circ} \quad 0.5^{\circ} \text{ n}$

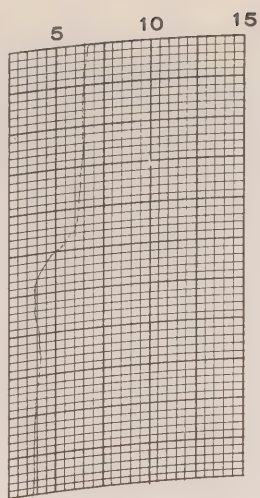
144^① 50^② W



63/03/09/17.0

 $50^{\circ} \quad 0.5^{\circ} \text{ n}$

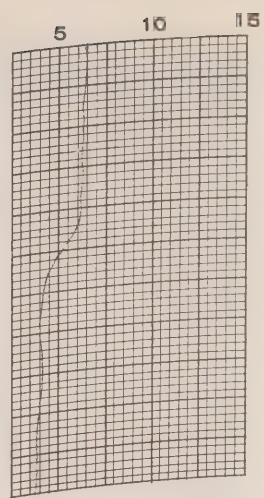
144.° 40' W



63/03/10/02.0

50° 00' N

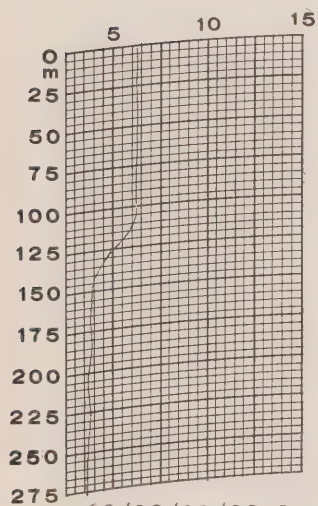
144° 53' W



63/03/10/17.0

50⁰⁰ 00⁰⁰

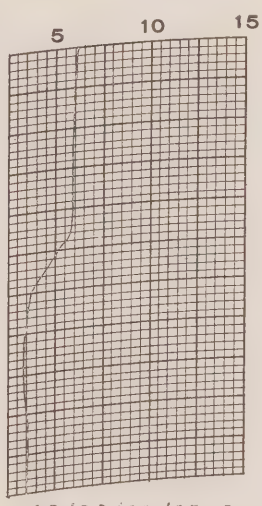
144^② 43^③W



63/03/11/02.0

49^o 57^v n

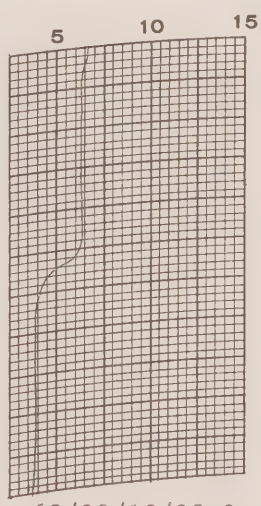
144^② 08^① W



63/03/11/17.0

49^c 57^b n

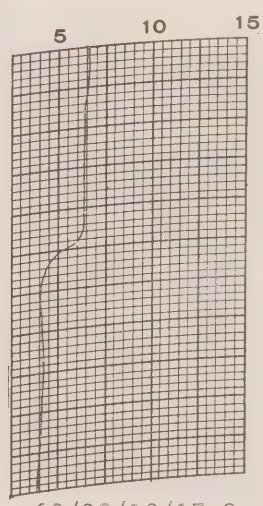
145° 16' W



63/03/12/02.0

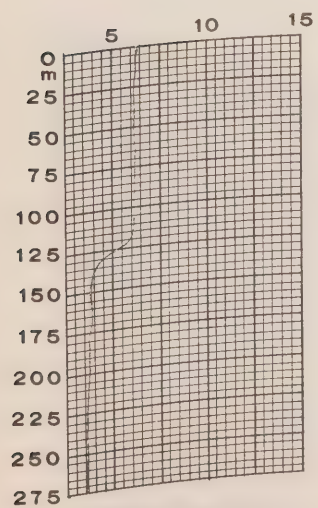
49° 55' n

145° 07' W



63/03/12/17.0

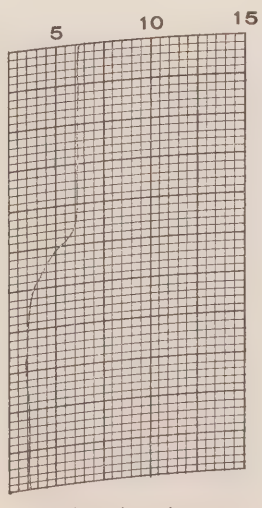
49^② 5^① n

 144^{32}Sm 

63/03/13/02.0

49° 55' n

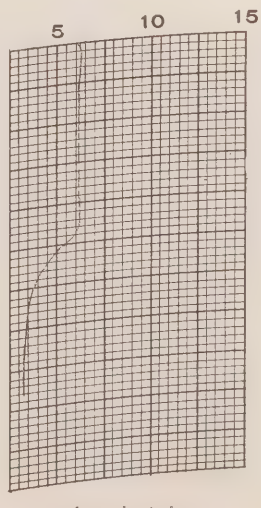
145° 02' W



63/03/13/17.0

50° 04' N

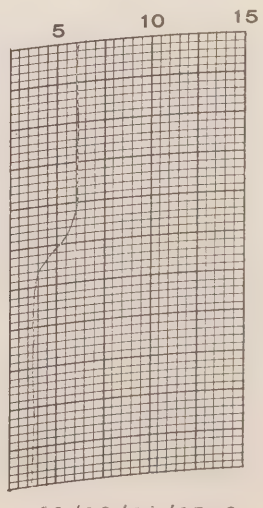
145° 18'W



63/03/14/02.0

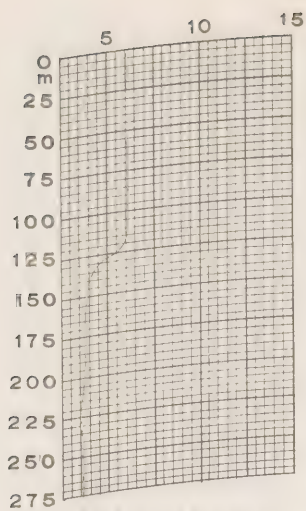
50⁰ 05¹ n

145° 15' W

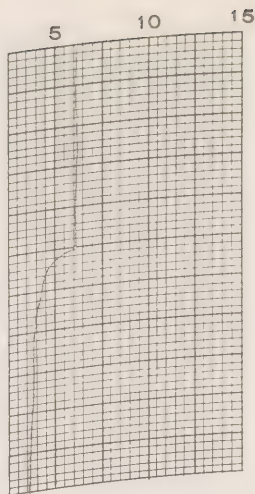


63/03/14/17.0

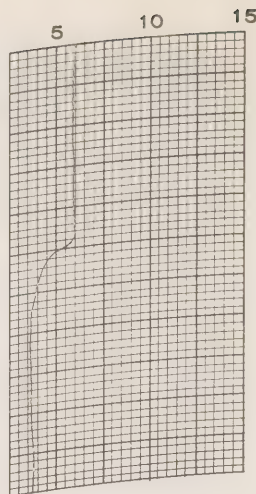
49^③ 57^④ n14.5^② 00' W



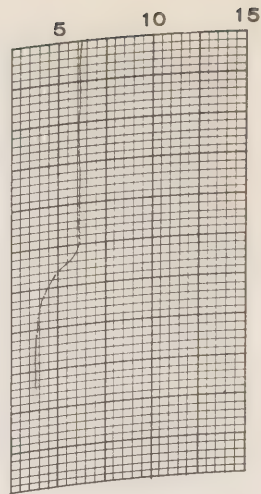
63/03/13/02.0
50° 02'N
144° 58'W



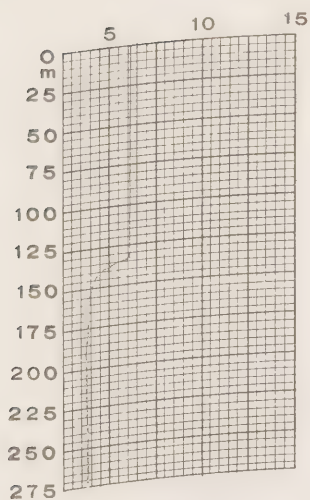
63/03/15/17.0
50° 07'N
145° 23'W



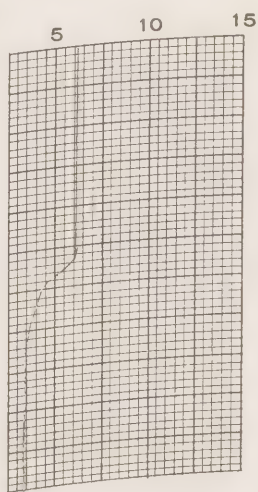
63/03/16/17.0
50° 13'N
145° 24'W



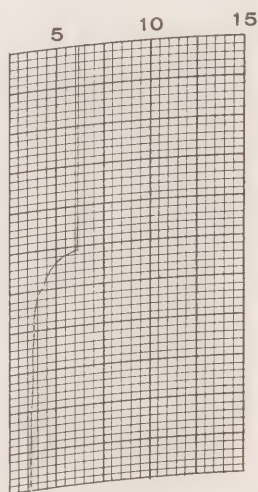
63/03/17/02.0
50° 07'N
144° 51'W



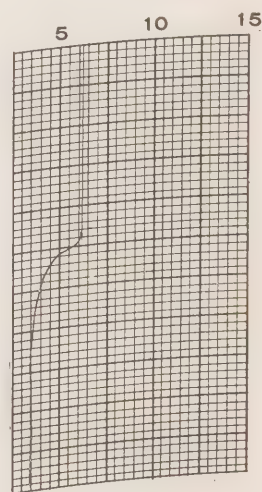
63/03/17/17.0
50° 00'N
145° 00'W



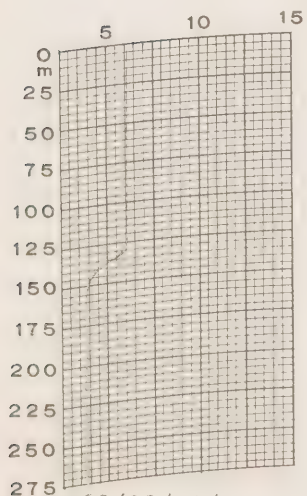
63/03/18/02.0
50° 05'N
145° 14'W



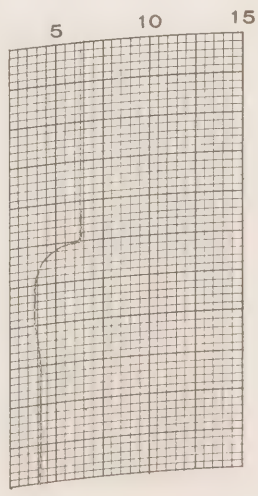
63/03/18/17.0
50° 01'N
145° 16'W



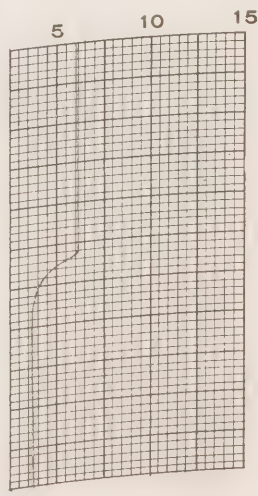
63/03/19/02.0
50° 03'N
145° 30'W



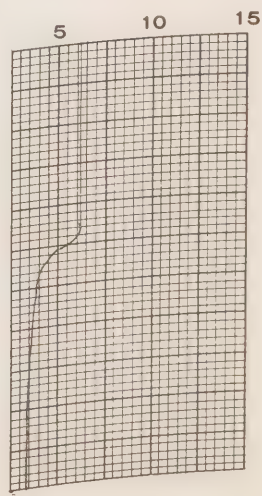
63/03/19/17.0
50° 00'N
145° 05'W



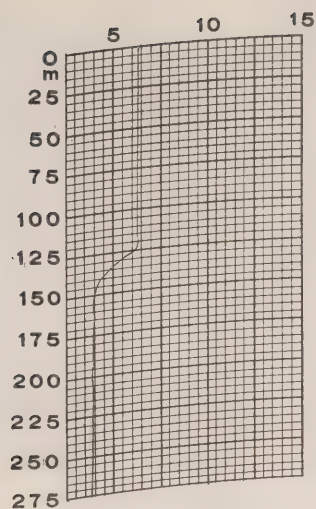
63/03/20/02.0
49° 50'N
145° 00'W



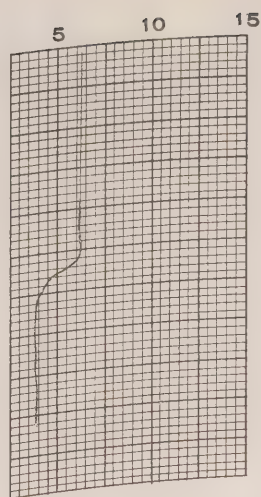
63/03/21/17.0
50° 07'N
145° 20'W



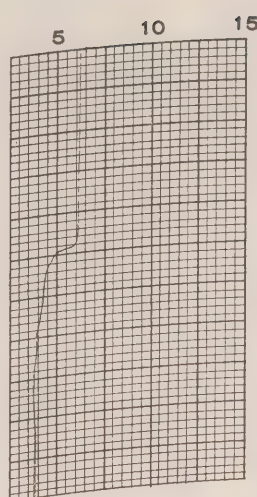
63/03/22/02.0
50° 05'N
145° 14'W



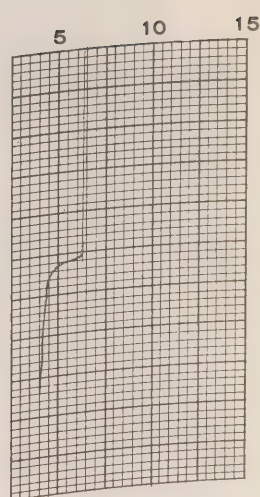
63/03/22/17.0
49° 58' n
144° 58' w



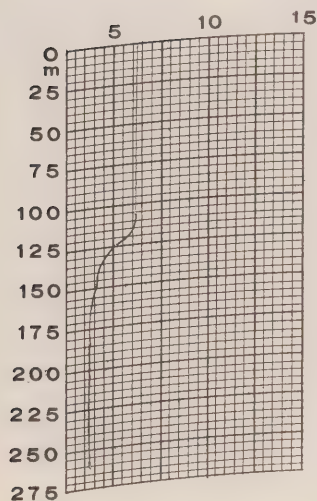
63/03/23/02.0
50° 00' n
145° 02' w



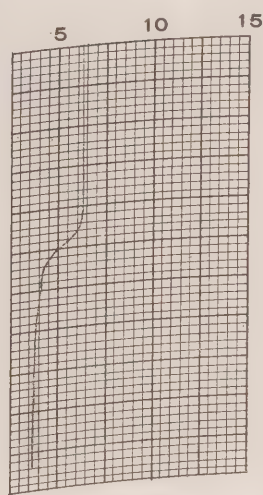
63/03/23/17.5
49° 58' n
145° 12' w



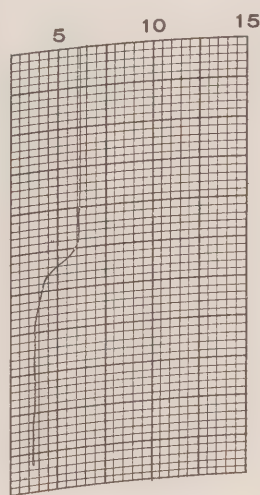
63/03/24/02.0
50° 00' n
145° 22' w



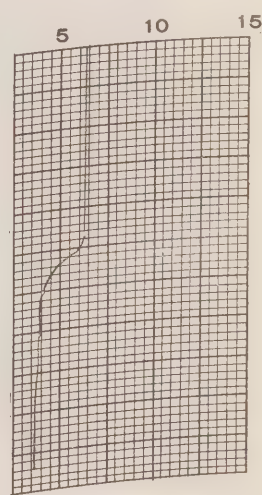
63/03/24/17.0
50° 07' n
145° 31' w



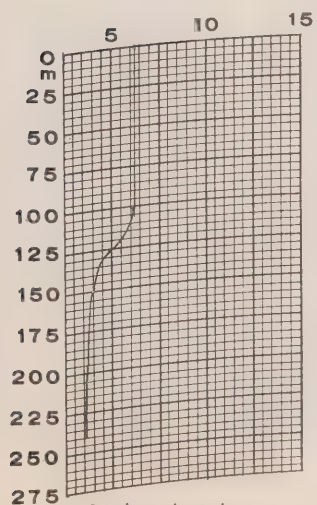
63/03/25/02.0
49° 56' n
145° 26' w



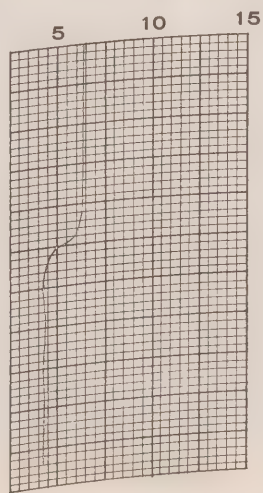
63/03/25/17.0
50° 10' n
145° 10' w



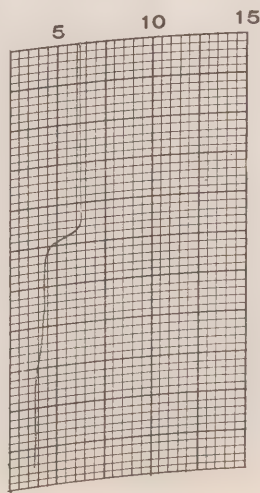
63/03/26/02.0
50° 03' n
145° 07' w



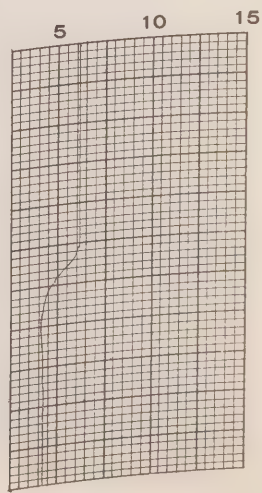
63/03/26/17.0
49° 58' n
145° 15' w



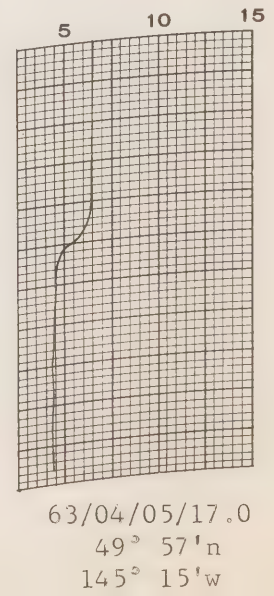
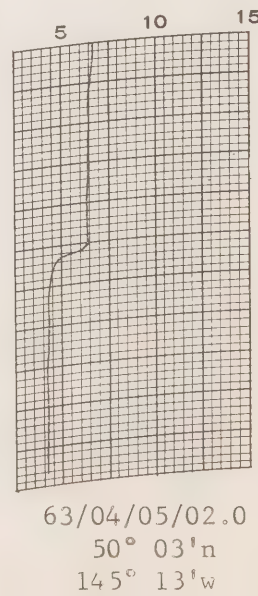
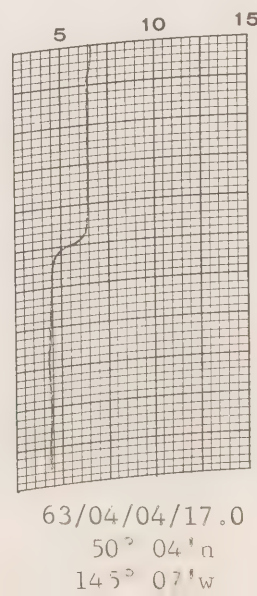
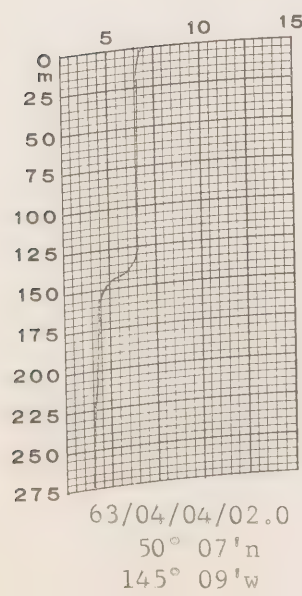
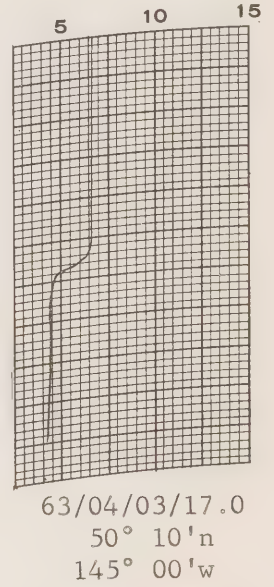
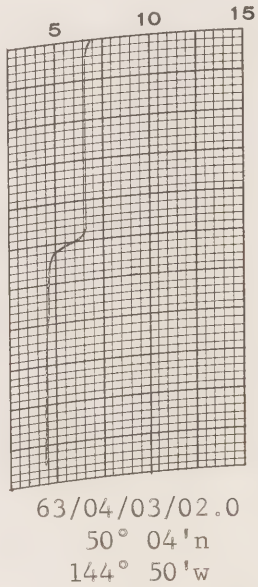
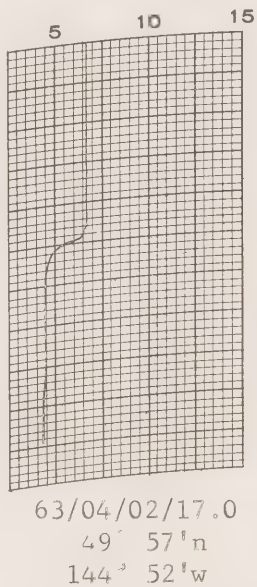
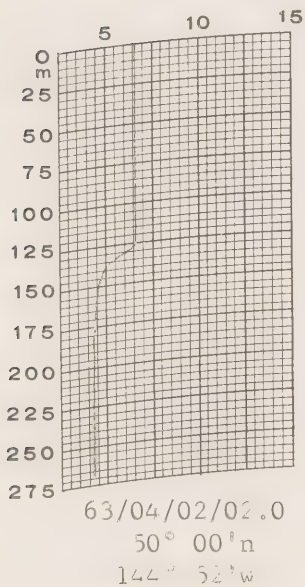
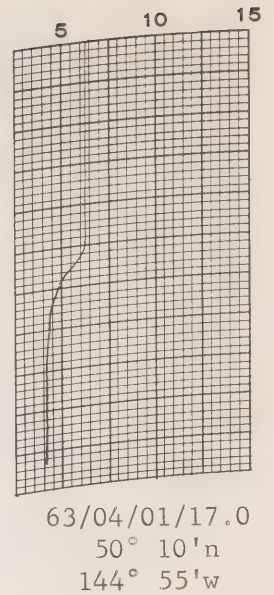
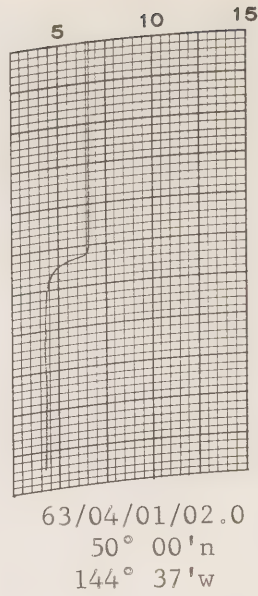
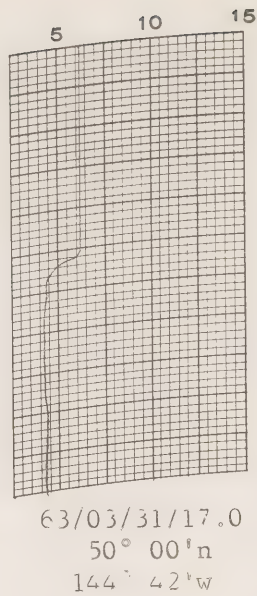
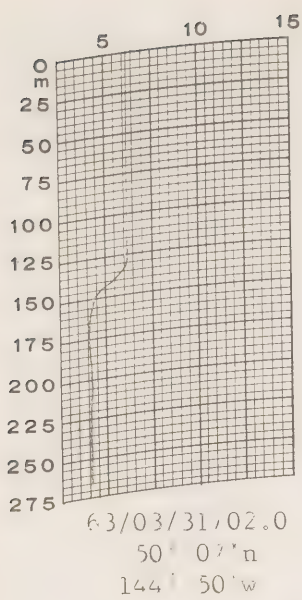
63/03/27/02.0
49° 49' n
145° 03' w

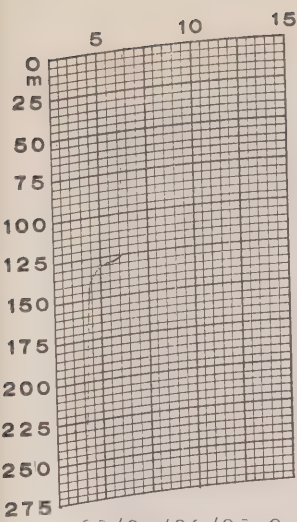


63/03/29/17.0
50° 00' n
145° 00' w

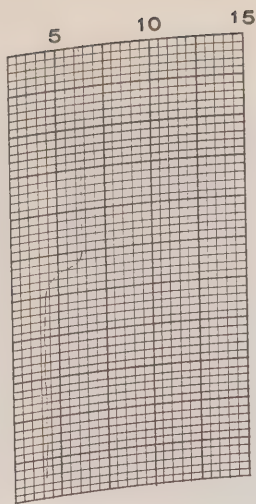


63/03/30/17.0
50° 05' n
144° 52' w

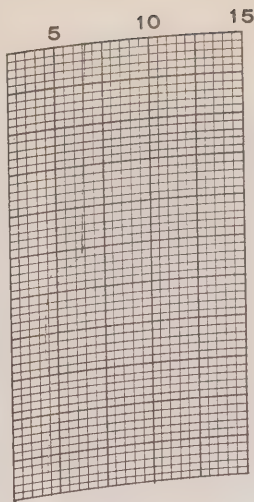




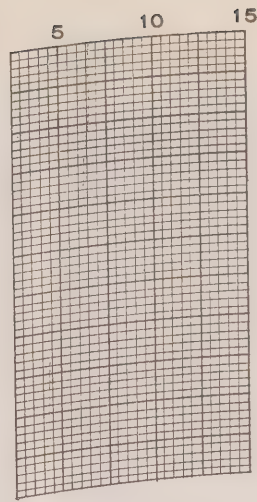
63/04/06/02.0
49° 53' n
145° 03' w



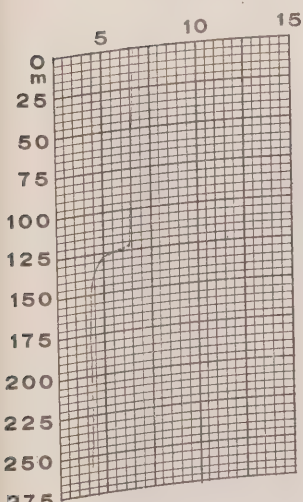
63/04/06/17.0
50° 06' n
145° 00' w



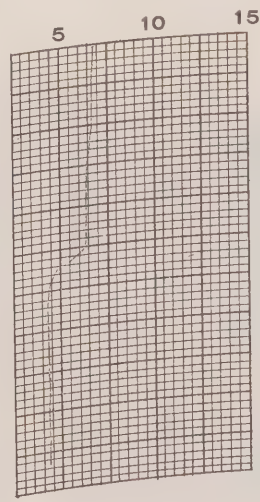
63/04/07/02.0
49° 57' n
145° 00' w



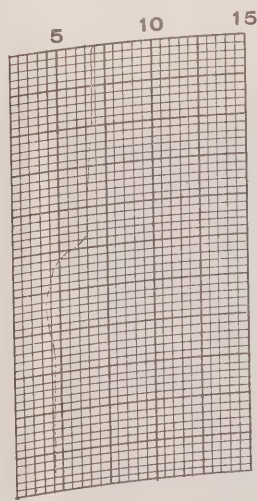
63/04/07/1.0
49° 50' n
145° 00' w



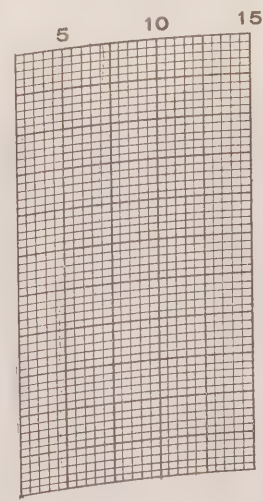
63/04/08/02.0
49° 47' n
145° 00' w



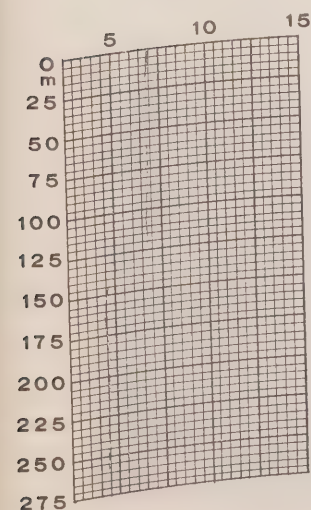
63/04/08/17.0
50° 00' n
144° 55' w



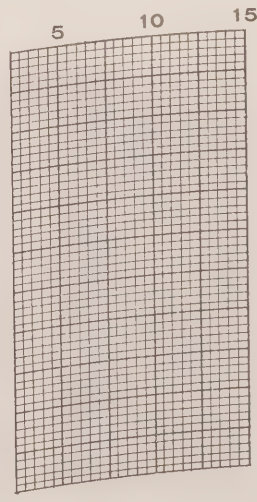
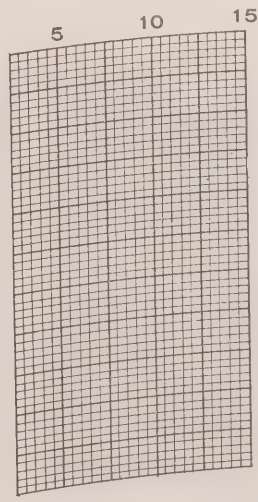
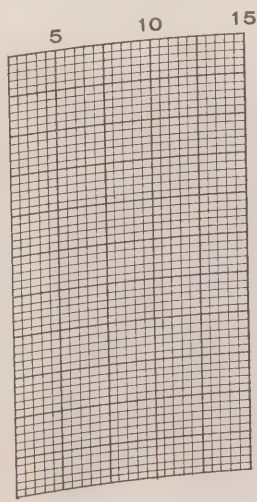
63/04/09/02.0
49° 54' n
144° 48' w



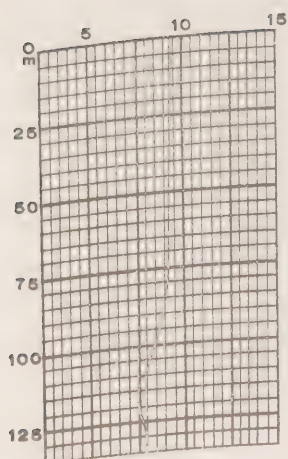
63/04/09/1.0
49° 57' n
144° 46' w



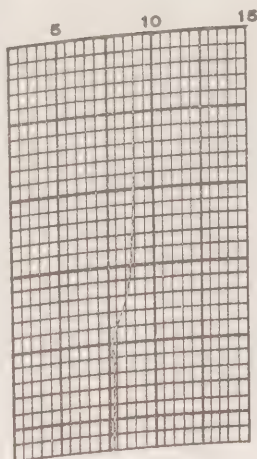
63/04/10/02.0
49° 58' n
144° 48' w



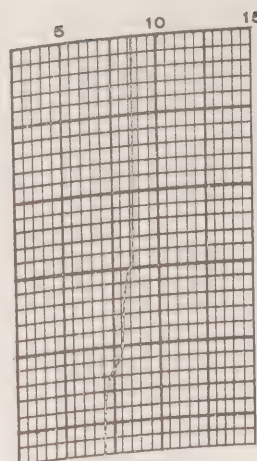
Patrol No. 55, C.C.G.S "Stonetown", OCEAN series



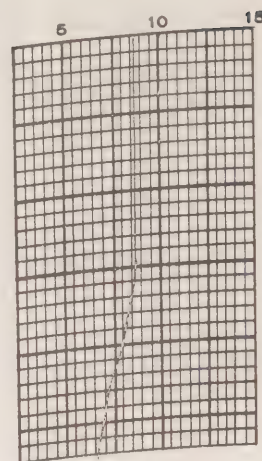
63/02/27/10.3
48° 40' n
126° 40' w



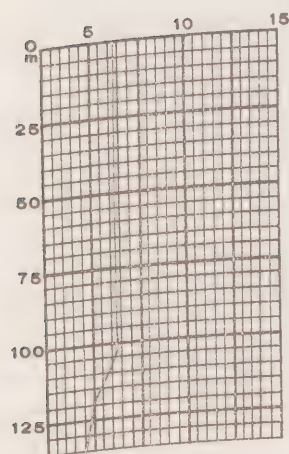
63/02/27/18.5
48° 42' n
128° 40' w



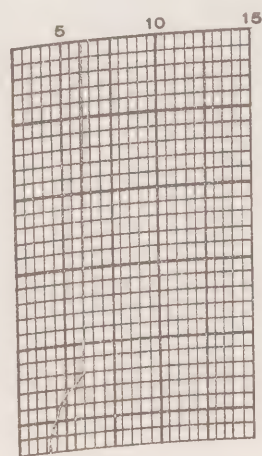
63/02/28/01.3
49° 00' n
130° 40' w



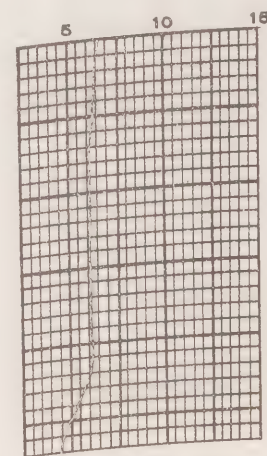
63/02/28/09.2
49° 09' n
132° 42' w



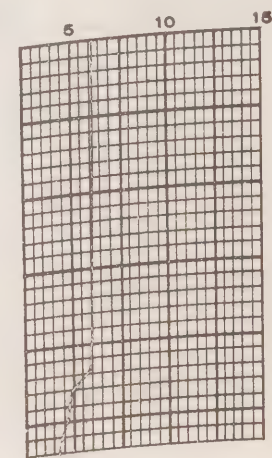
63/03/05/18.2
49° 55' n
144° 35' w



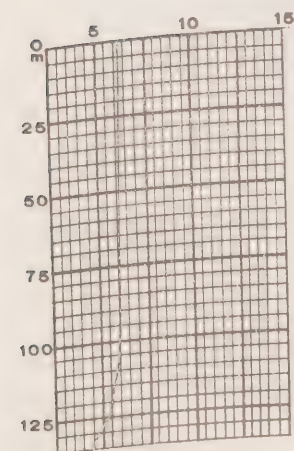
63/03/07/17.5
49° 55' n
144° 47' w



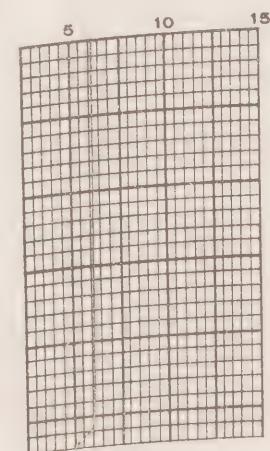
63/03/12/18.0
49° 57' n
144° 52' w



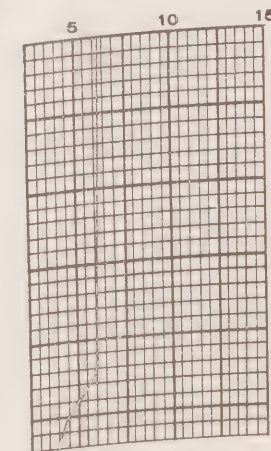
63/03/14/17.5
49° 57' n
145° 00' w



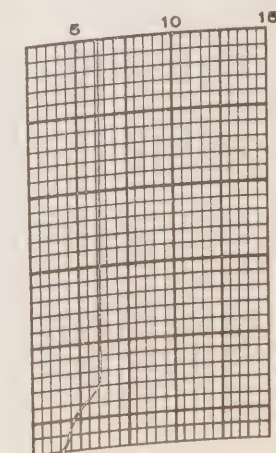
63/03/19/17.3
49° 57' n
145° 06' w



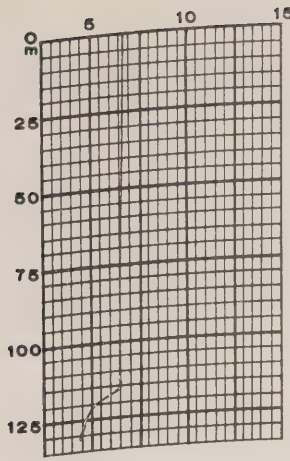
63/03/21/17.2
49° 47' n
145° 05' w



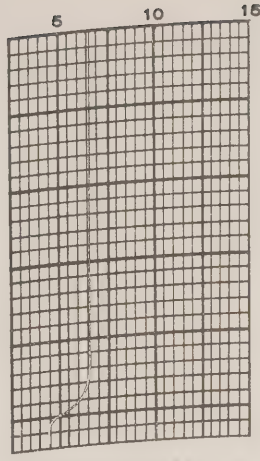
63/03/26/17.3
49° 55' n
145° 10' w



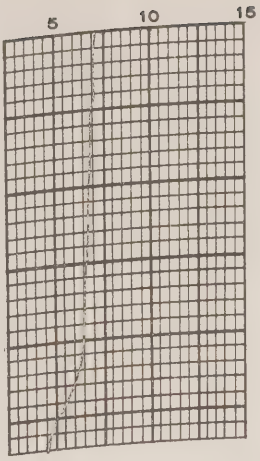
63/03/29/18.3
50° 00' n
145° 00' w



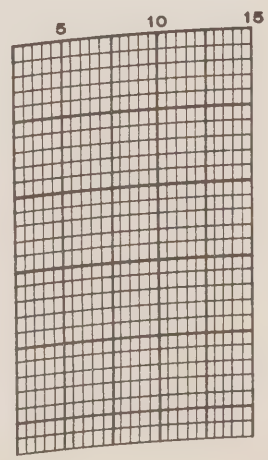
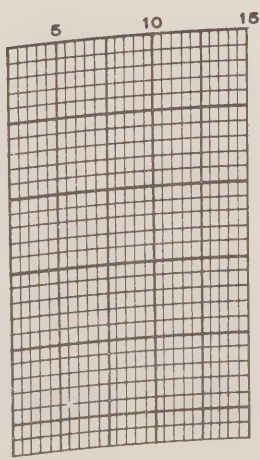
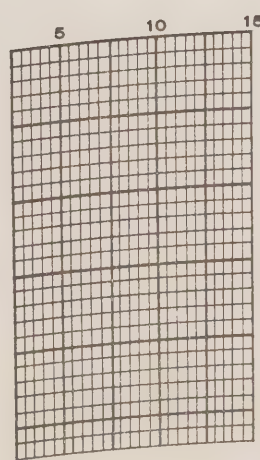
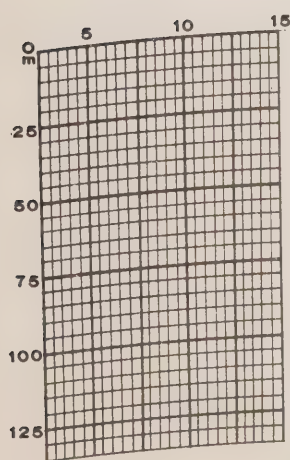
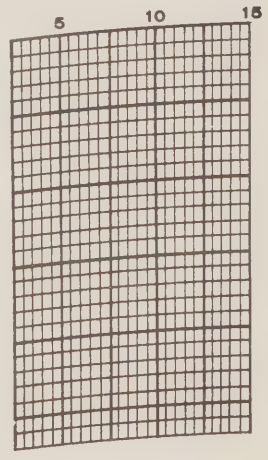
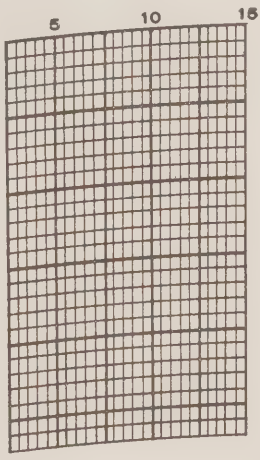
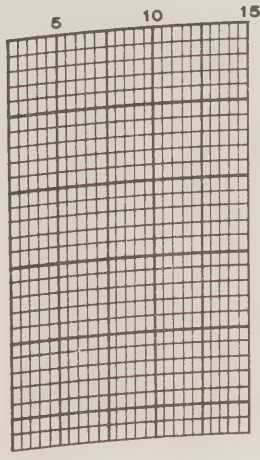
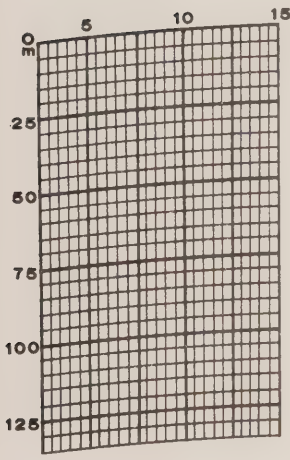
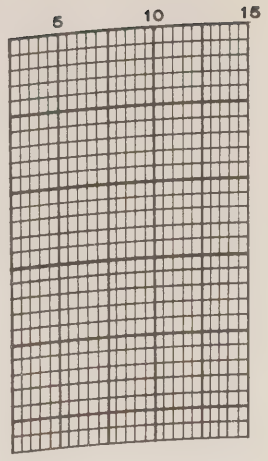
63/04/02/17.5
50° 00' N
144° 50' W



63/04/04/18.0
50° 04' N
144° 05' W



63/04/09/18.0
49° 57' N
144° 45' W



S E C T I O N V

Surface salinity data

Surface salinity observations, Ocean Weather Station "P",
observed at 0200 G.M.T.

Date	Position	Salinity ‰
Survey P-63-1, C.C.G.S. "St. Catharines"		
Jan 16, 1963	48°41'N 126°40'W	32.480
17	49°03'N 131°40'W	32.519
17	49°15'N 133°40'W	32.490
17	49°23'N 135°40'W	32.458
18	49°30'N 137°40'W	32.479
18	49°37'N 139°40'W	32.483
18	Grid ON	32.511
19	OS	32.509
20	OS	32.486
21	OS	32.496
22	OS	32.506
23	KS	32.518
24	OS	32.499
25	KS	32.498
26	OK	32.500
27	OS	32.486
28	OS	32.493
31	OS	32.525
Feb 1	OS	32.518
2	OS	32.517
3	OS	32.522
4	OS	32.524
5	OS	32.496
6	OJ	32.504
7	KJ	32.505
8	OS	32.505
9	OS	32.511
10	OS	32.528
11	OS	32.508
12	OS	32.433
13	OS	32.461
14	OS	32.482
15	OS	32.503
16	OS	32.513
17	OS	32.474
18	OS	32.486
20	OS	32.497
21	OS	32.488
22	KS	32.506
23	JS	32.486
24	OS	32.483
25	OS	32.483
26	OS	32.494
27	OS	32.432

Date		Position	Salinity ‰
Patrol No. 55, C.C.G.S. "Stonetown"			
Mar	3, 1963	49°55'N 144°47'W	32.499
	4	49°47'N 144°49'W	32.499
	5	49°52'N 145°23'W	32.548
	6	50°02'N 145°14'W	32.505
	7	50°10'N 145°16'W	32.480
	8	50°00'N 145°00'W	32.475
	9	50°05'N 144°50'W	32.514
	10	50°00'N 144°53'W	32.498
	11	49°57'N 145°08'W	32.517
	12	49°55'N 145°07'W	32.507
	13	49°56'N 145°03'W	32.492
	14	50°08'N 145°15'W	32.598
	15	50°02'N 144°58'W	32.503
	16	50°10'N 145°19'W	32.544
	17	50°07'N 144°51'W	32.530
	18	50°05'N 145°14'W	32.564
	19	50°03'N 145°30'W	32.553
	20	49°50'N 145°00'W	32.532
	21	49°47'N 145°05'W	32.516
	22	50°05'N 145°14'W	32.546
	23	50°00'N 145°02'W	32.508
	24	50°00'N 145°22'W	32.539
	25	49°56'N 145°26'W	32.599
	26	50°03'N 145°07'W	32.567
	27	49°49'N 145°03'W	32.619
	31	50°07'N 144°50'W	32.598
Apr	1	50°00'N 144°37'W	32.554
	2	50°00'N 144°52'W	32.439
	3	50°04'N 144°50'W	32.537
	4	50°07'N 145°00'W	32.570
	5	50°03'N 145°07'W	32.570
	6	49°53'N 145°15'W	32.613
	7	49°57'N 145°00'W	32.580
	8	49°47'N 145°00'W	32.576
	9	49°54'N 144°48'W	32.626
	10	49°58'N 144°48'W	32.502

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CANADA

No. 3

**1963 Data Record Series
OCEAN WEATHER STATION "P"
North Pacific Ocean**

Canadian Oceanographic Data Centre

Programmed by the Canadian Committee on Oceanography

ROGER DUHAMEL, F. R. S. C.
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CANADIAN OCEANOGRAPHIC DATA CENTRE

No. 3

1963 Data Record Series

Ocean Weather Station "P" North Pacific Ocean

(C O D C Reference: 02-63-002)

Programmed by the Canadian Committee on Oceanography

FISHERIES RESEARCH BOARD OF CANADA

Ocean Weather Station "P" North Pacific Ocean

Ships	C. C. G. S. "St. Catharines"
	C. C. G. S. "Stonetown"
Local cruise designation	P-63-2
Cruise period	April 10 - June 28, 1963
Observer	R. B. Tripp

Pacific Oceanographic Group Nanaimo, B. C.

SECTION I

Description of data collection procedures



Figure 1.

The Canadian Weather Ship C.C.G.S. " St. Catharines " (D.O.T. Photo)

The oceanographic winch is located on the starboard side of the signal deck, just aft of the bridge wing.



Figure 2.

The Canadian Weather Ship C.C.G.S. "Stonetown".

(D.O.T. Photo)

Bathythermograph soundings boom can be seen below the bridge on the signal deck.

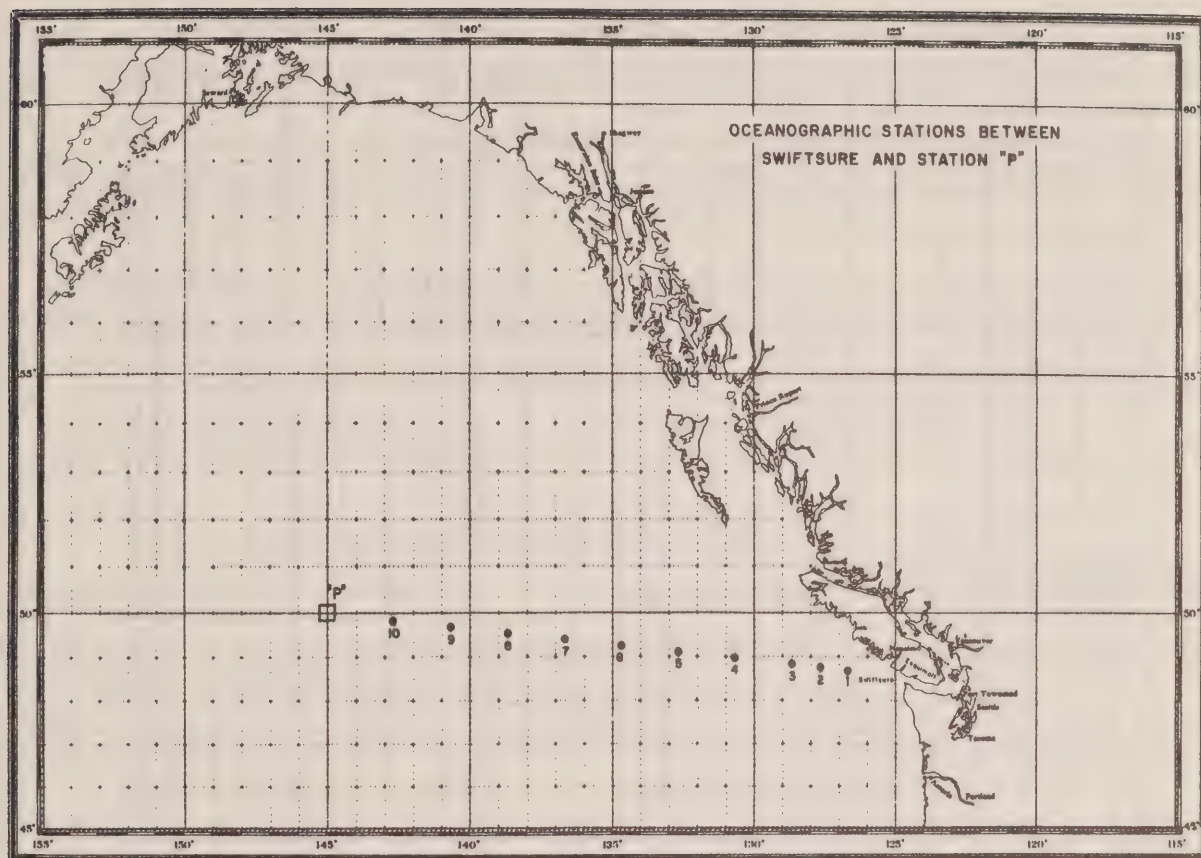


Figure 3. Locations of oceanographic stations observed between Swiftsure Bank and Ocean Weather Station "P".

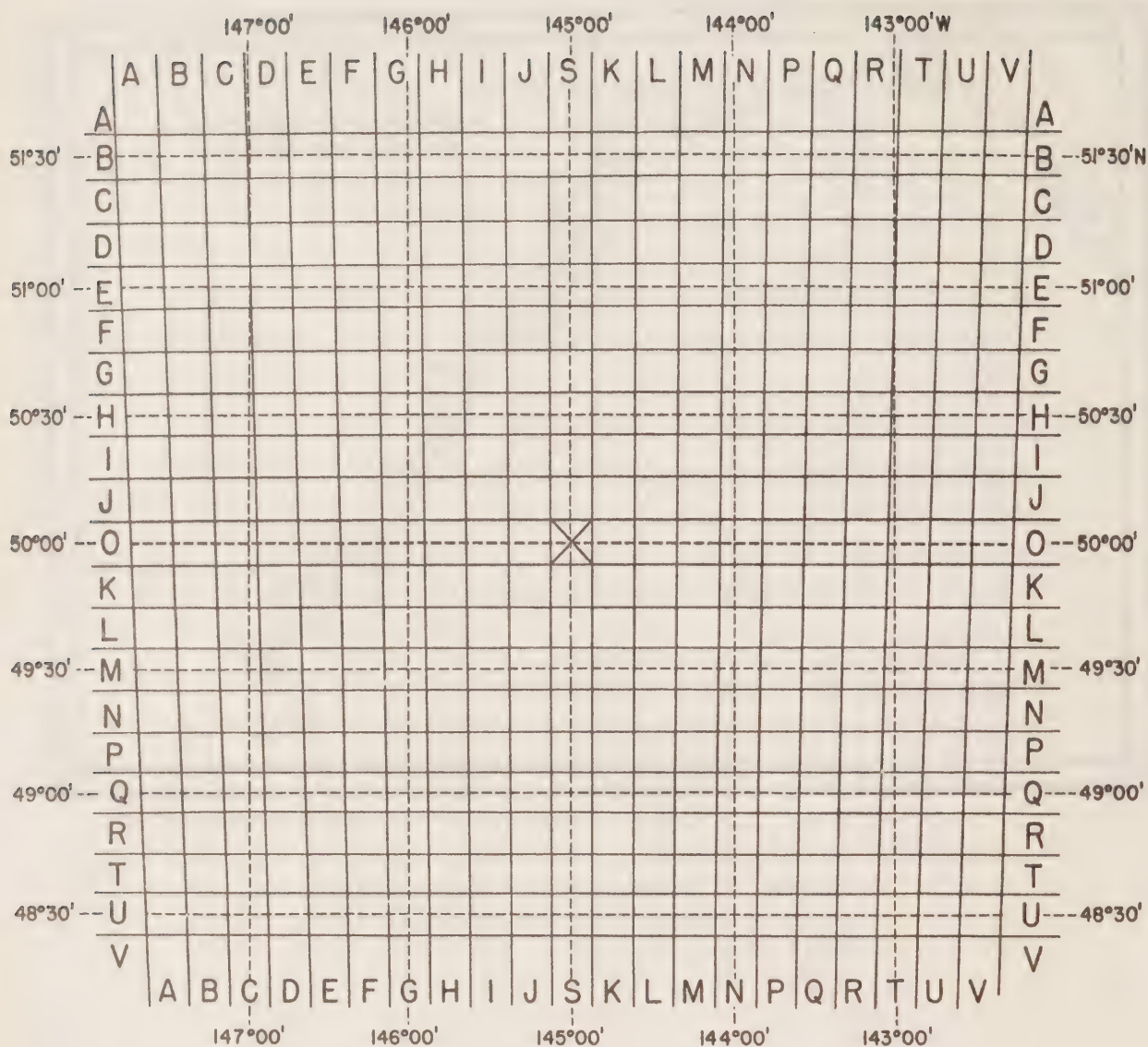


Figure 4.

Position-indicating grid for Ocean Weather Station "P", with mercator projection of a latitude and longitude grid superimposed.

INTRODUCTION

Canadian operation of Ocean Weather Station "P" (latitude 50°00'N., longitude 145°00'W) was inaugurated in December 1950. The Station is manned by two vessels of the Canadian naval frigate class operated by the Marine Services of the Department of Transport. They are the C.C.G.S. "St. Catharines" and the C.C.G.S. "Stonetown" (Fig. 1 and 2) (Atlantic Oceanographic Group, MS, 1961). Each ship remains on station for a period of 6 weeks, and is then relieved by the other ship thus maintaining a continuous watch. The chief purpose of the Station is to maintain a meteorological station for surface and upper-air observations.

Bathythermograph observations have been made at Station "P" by the Pacific Oceanographic Group since July 1952. A program of more extensive oceanographic observations on board C.C.G.S. "St. Catharines" was commenced in August 1956. This was further extended in April 1959 by the addition of a series of oceanographic stations along the route to and from Station "P" and Swiftsure Bank (Fig. 3).

EXTRACT OF CRUISE LOG (G.M.T.)

April 9, 1700: C.C.G.S. "St. Catharines" departed Esquimalt, B.C. enroute to Ocean Weather Station "P". Observed 9 oceanographic stations.

April 12, 1630: relieved C.C.G.S. "Stonetown" at station "P". Maintained normal patrol routine.

May 12: S.W. gales interrupted oceanographic work.

May 18: weather abated and oceanographic work resumed.

May 24, 1630: relieved by C.C.G.S. "Stonetown", and returned to base. 10 oceanographic stations observed enroute.

May 27, 1850: berthed at Esquimalt, B.C.

OBSERVATION PROCEDURES

General program of observations from C.C.G.S. "St. Catharines"

The C.C.G.S. "St. Catharines" is equipped with deck and laboratory facilities required to make oceanographic observations. Oceanographers from the Pacific Oceanographic Group accompany the ship on each patrol.

Enroute to and returning from Station "P", ten oceanographic stations (Fig. 3) are observed, with serial observations of temperature and salinity to a depth of 2000 m and B.T. casts to 275 m. The stations are positioned at each alternate 40' of longitude interval. B.T. casts to 275 m are obtained at the intervening 40' longitudes i.e. 129°40'W, 131°40'W, etc.

At Station "P", a shallow oceanographic station to 400 m and an intermediate depth oceanographic station to 2000 m is observed weekly, generally 4 days apart. At least 3 times during the survey, a deep cast from 2000 to 4200 m is observed within 2 days of an intermediate station. Serial observations of temperature, salinity and dissolved oxygen are made at all stations, and dissolved inorganic silicate observations are made occasionally at the intermediate and deep stations. A 275 m BT cast is also made at each station.

Twice-daily BT casts are made on Station at 0300 and 1700 G.M.T. A surface water sample for salinity determination is collected at the 0200 cast. Special series of BT casts to 135 m depth are made in the morning at frequent intervals during the patrol, for the purpose of providing ocean temperature information to the Canadian Oceanographic Information Service at Esquimalt (Giovando, MS, 1962).

Vertical zooplankton hauls from 150 m depth are made daily on Station, and from 1200 m twice during the patrol. Horizontal tows for collection of zooplankton are made at the beginning, middle and end of each patrol. Ocean productivity measurements of photosynthesis rate (C_{14} method), plant pigment concentration, and light extinction are made at frequent intervals during the survey.

Observational procedures, Survey P-63-2, C.C.G.S. "St. Catharines, April 10 - May 27, 1963

Nine oceanographic stations were observed during the trip to Station "P". BT casts to 275 m were made at each 40' of longitude enroute. Twelve oceanographic stations were observed at Station "P" during the patrol; 3 were made to 400 m depth; 6 to 2000 m; and 3 in the 2000 to 4200 m interval. BT casts to 275 m were made at each oceanographic station and twice-daily at 0200 (to 135m) and at 1700 G.M.T. (to 275m). Dissolved oxygen determinations were made during the 12 oceanographic stations at Station "P".

Vertical zooplankton hauls from 150 m depth were made at Station "P" in the mornings of 22 days. Two hauls from 1200 m were also made. Eight surface horizontal plankton tows were made.

Ocean productivity measurements of photosynthetic rate and plant pigment concentration at Station "P" were made every day on a surface sample, and for 4 days on samples obtained to 50 m depth.

BT observations at 10-minute intervals for the OCEAN series were taken at 1800 G.M.T. on 17 days.

Program of observations, C.C.G.S. "Stonetown", Patrol No. 56, May 25 - June 28, 1963

BT casts were made daily whilst the ship was on station, at 0130 G.M.T. to 135 m and at 1700 G.M.T. to 275 m. Surface salinity samples were collected daily at 0200 G.M.T. OCEAN series observations were made to 135 m on 27 days during the patrol.

Oceanographic station procedures

1. Serial observations were made at depths of 10, 20, 30, 50, 75, 100, 125, 150, 175, 200, 250, 300, 400, 500, 750, 1000, 1250, 1500, 2000, 2500 (or 2400), 3000, 3500, 4000 and 4200 metres, depending on the type of station observed and depth of water. The shallow stations to 400 m were observed in one cast. The intermediate depth stations to 2000 m were observed in 2 casts: the first to 400 m, the second from 500 to 2000 m. The deep cast stations had observations in the interval 2000 to 4200 m.

2. Surface samples (0 metres) for salinity and dissolved oxygen determinations were obtained with a one-gallon bucket made of "Uscolite CP", a corrosion-resistant thermoplastic material. The surface temperature was measured in this bucket sample with an armoured thermometer graduated in 0.5 C° intervals.

3. Samples at depth were obtained with Nansen reversing water samplers. From each sampler, the first sample was drawn into a 300 ml B.O.D. bottle for dissolved oxygen analysis. Then, a sample for salinity analysis was drawn into an 8-oz glass medicine bottle and sealed with a plastic-lined screw cap. These analyses were done in the ship-board laboratory.

4. Temperatures at depth were measured by deep-sea reversing thermometers of German (Richter & Wiese) or Japanese (Yoshino Keiki Co.) manufacture.

33 protected reversing thermometers were available for use, and all samplers were equipped with 2 instruments each, except those at the depth intervals 20, 50, 100, 150, 175 and 200 m. An unprotected reversing thermometer was used on all samplers from 250 m to the deepest, except on the 500 and 3500 m samplers.

5. Water transparency and colour observations were made with a white secchi disc of 30 cm diameter.

6. Station locations were determined by the officers of the watch, who also made the meteorological observations used in the oceanographic records.

LABORATORY PROCEDURES

Methods of analyses

The salinity determinations of the samples collected during survey P-63-2 were made on an inductive salinometer, Model 601 MK III, manufactured by Auto-Lab Industries Pty. Ltd., Sydney, Australia (Brown and Hamon, 1961). The analyses were done within 4 or 5 days after the collection of the samples.

The dissolved oxygen analyses were done by a modified Winkler method (Strickland and Parsons, 1960).

Surface salinity data

These are presented in a table listing the date, position, and salinity values. The data for survey P-63-2 are the results of determinations on the Auto-Lab inductive salinometer and are considered to have an accuracy of $\pm 0.003\%$. The data for "Stonetown" patrol No. 56 are the results of single determinations on the conductivity salinometer (Strickland, MS, 1958) and have an accuracy range of $\pm 0.009\%$.

BATHYTHERMOGRAPH DATA

Bathythermograms

The BT traces have been drawn on standard pre-printed graphs resembling BT calibration grids of several depth ranges. The slides were positioned on the appropriate calibration grid in an adjustable holder and displayed in a reflecting-type projector.

All BT traces were aligned on the appropriate calibration grids using a (3 metre) temperature value obtained from a thermograph recording of the engine-room intake temperature. The top of the trace was always aligned with the zero depth grid line.

The bathythermograms are arranged in a chronological order in three sections for each ship, the first showing the oceanographic station and twice-daily observations to 135 m, the second to 275 m, and the third showing the observations in the OCEAN series. The date/time and location information are noted below each bathythermogram, using the C.O.D.C. coding system. Those BT observations made at an oceanographic station are identified by an asterisk(*) preceding the date/time group. Only one of the 8 slides in each day's OCEAN group was reproduced as a bathythermogram. This slide was chosen as being representative of the group. The position co-ordinates are those of the last slide in the group.

PERSONNEL

The oceanographer on board C.C.G.S. "St. Catharines" for survey P-63-2 was Mr. R.B. Tripp. The captain was Mr. J.A. Sleight. Members of the crew assisted in the oceanographic observations work, operating the winches and handling the gear. The regular twice-daily BT observations from both ships were made by the quartermasters under the supervision of the officers of the watch.

The following listed persons assisted in the preparation of the data for presentation to the Canadian Oceanographic Centre:

H.J. Hollister:	supervision, introduction
D.G. Robertson:	checking data summary
A.R. Stanley-Jones:	drawing "Stonetown" bathythermograms
J.F. Wickett:	drawing "St. Catharines" bathythermograms.

SECTION II

Description of the machine-generated data record

INTRODUCTION (Section II)

The following section is devoted to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms are transferred to punch cards for subsequent electronic data processing.

The data are processed on an IBM 1620 computer using the OCEANS II program (Sauer, C.D. and Fofonoff, N.P., 1963).

Besides computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and interpolation at Standard Oceanographic Depths.

After the data have been processed, the data-record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous duplimat masters. The duplimat masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a Standard Deviation (σ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "General Information" of Section II of the Data Record.

The measurement error estimate of a specific observation is stated as a multiple of the standard deviation derived as above and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, i.e., $1\sigma = A$, $2\sigma = B$, etc. (In the data record $1\sigma (A)$ is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray. A parabola is fitted through 3 values of a given variable (T, S, O₂) considered as a function of depth. The two interpolation parabolas require a total of 4 points (observed depths). The middle points are common to both parabolas. The average of the 2 values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement under normal routine field conditions (σ) by:

$$\frac{\sigma_i}{\sigma} = \left\{ \frac{(\Delta V_i)^2}{\sigma^2} + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left(\frac{\sigma_n}{\sigma} \right)^2 \right\}^{\frac{1}{2}}, \text{ where}$$

σ_i = Standard deviation of the combined error estimates at standard oceanographic depth

$$\Delta V_i = \frac{1}{3} (V_{i,1} - V_{i,2}),$$

the interpolation error estimate of variable "V" at standard oceanographic depth.

γ = Interpolation polynomial coefficient.

Z_j = Observed depth.

Z_i = Standard oceanographic depth, such that: $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of this fraction $\frac{\sigma_i}{\sigma}$ is reported in the Data Record, e.g.: 2 = B, 3 = C, etc.

With respect to the interpolated value of the Salinity variable if reported to three decimal digits, the "interpolation error estimate" is given only when $\frac{\sigma_i}{\sigma} \geq 2$. If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

GENERAL INFORMATION

<u>Institute:</u>	Pacific Oceanographic Group, Nanaimo, B. C.
<u>Observation platforms:</u>	C. C. G. S. "St. Catharines" and C. C. G. S. "Stonetown"
<u>Vessels' cruising speeds:</u>	13 knots
<u>Total number of stations occupied:</u>	31
<u>Anemometer height above sea level:</u>	15 metres
<u>Water transparency</u>	was obtained using a Secchi Disc
<u>Barometer readings</u>	were obtained using an Aneroid Barometer and were corrected prior to recording
<u>Air temperature</u>	was observed from a Sling Psychrometer
<u>Wet bulb temperature</u>	was observed from a Sling Psychrometer
<u>Surface Sea water temperature</u>	was obtained from a bucket sample using a deck thermometer

The following Standard Deviations were used to express both measurement and interpolation error estimates:

<u>Temperature</u>	[0.02]
<u>Salinity</u>	[0.002]
<u>Oxygen</u>	[0.03]

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE NUMBER:

Assigned by the Institute. Starts off with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE NUMBER:

Indicates the chronological order in which the stations were observed.

(3) LATITUDE:

Latitude and longitude give the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE:

Designates the geographic area code (see marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR:

The time (Greenwich Mean Time) at which the environmental surface observations were made.

It is reported to tenths of hours.

If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH

The sounding: The measured distance (by any method) from surface to bottom, corrected and reported in meters.

(11) MAXIMUM

SAMPLING DEPTH: A code to indicate the deepest sampling depth.

00 m - 50 m = 00

51 m - 150 m = 01

151 m - 250 m = 02

etc.

(12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).

(13) WATER COLOUR: A code based on the percentage of yellow (see table 2).

(14) WATER

TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage; the General Information Chapter in Section II of the data record will state which method was used.

(15) WAVES 1

($D_w D_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(16) WAVES 2

($D_w D_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:- wind variable or direction unknown.

(18) WIND FORCE
(WND-FCE):

Beaufort Notation (See Table 6).

WIND SPEED
(WND-SPD):

Anemometer reading in metres per second.

(19) BAROMETER:

The barometric pressure expressed in millibars: the General Information Chapter in Section II of the data record will state the type of instrument, and whether corrections have been applied.

(20) AIR TEMPERATURE: To 1/10 of a degree Centigrade.

- (21) WET BULB: To 1/10 of a degree Centigrade.
- (22) WW CODE: Present Weather Code (See Table 7).
Ref: WMO Code 4677.
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8).
Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9).
Ref: WMO Code 2700.
- (25) VISIBILITY: Visibility at the surface (See Table 10).
Ref: WMO Code 4300.
- (26) STATION: A strictly local station reference number, usually assigned prior to carrying out a cruise.
- (27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

OBSERVED DATA HEADINGS

(1) GMT (2) DEPTH (3) TEMP (4) SAL (5) OXYGEN (6) SGMT
(7) SOUND (8) PO₄ (9) -P- (10) NO₂ (11) NO₃ (12) SiO₃ (13) pH.

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical observations were collected during the cruise.

- (1) G. M. T. The Greenwich Mean Time of in-situ thermometer inversion and sea water sample collection.

When a multiple cast was initiated before and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH:

The depth in meters is computed from the meter wheel reading, the wire angle, and the corrected unprotected thermometer reading at the moment the oceanographic bottle reversed.

Alphabetical characters "B" to "I", (if present), immediately to the right of this column, are measurement error estimates (see: "Introduction" to Section II of the data record).

(3) TEMPERATURE:

In-situ temperatures from deepsea reversing thermometers graduated in 0.1° C. intervals, and read to 0.01° C. Surface temperature collection procedures as indicated in the chapter "Observation Procedures" of Section I, and/or under "General Information" of Section II.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(4) SALINITY:

Salinity as defined by:

$$S = 0.03 + 1.805 \text{ Cl } \text{‰}$$

a. 1/100 parts per 1000, or

b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (2).

In case b: no error estimate indication is provided for, but the additional decimal digit takes its place.

(5) OXYGEN:

The concentration of dissolved oxygen as expressed in millilitres per litre to 2 decimal places.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(6) SIGMA-T:

The density as defined by $\sigma_t = (\text{Specific gravity} - 1) \times 1000$, and expressed in milligrams per cm^3 i. e., Sigma-T reported as 2456 reads 24.56 milligrams/ cm^3 and corresponds to a specific gravity of 1.02456

- (7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula, expressed in terms of temperature, salinity and total pressure.
- (8) PO_4 Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre
- (9) -P- Total Phosphorus reported to hundredths of microgram-atoms per litre
- (10) NO_2 Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre -No dissolved nitrogen included-
- (11) NO_3 Nitrate-Nitrogen reported to tenths of microgram-atoms per litre
- (12) SiO_3 Silicate-Silicon reported in whole microgram-atoms per litre
- (13) pH The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

INTERPOLATED DATA HEADINGS

(1) DEPTH (2) TEMP (3) SAL (4) OXYGEN (5) SGMT (6) SOUND (7) DELTA-D (8) POT-EN (9) SV A.
--

- (1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

(2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(3) SALINITY

A. The reported salinity values are observed to three decimal places.

(i) the interpolation error estimate is less than twice the standard deviation of measurement

-the interpolated value is reported to three decimal places (e.g., 30.139).

(ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.

-the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e.g., 29.23C).

B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.

-the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e.g., 30.59B).

(4) OXYGEN: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(5) SIGMA-T:

Computed from Temperature and Salinity values at standard oceanographic depth, and expressed in mgms/cm³ (e.g., 23.19).

(6) SOUND
VELOCITY:

Computed from temperature and salinity values at standard oceanographic depth, and expressed in tenths of metres per second (e.g., 1462.3 m/sec).

(7) DELTA-D:

The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P [\alpha(T, S, P) - \alpha_{35, 0, P}] dP$$

ΔD is expressed in dynamic metres (10^5 ergs/gram) and recorded to three decimal places (e. g., 2.345 dyn. metres).

(8) POTENTIAL
ENERGY
ANOMALY:

The Potential energy anomaly χ as defined by:

$$\chi = 1/g \int_0^P \rho \delta d\rho = \int_0^z \rho \delta dz$$

χ is expressed in units of 10^8 ergs/cm² and recorded to two decimal places (e. g., 116.44).

(9) SPECIFIC
VOLUME
ANOMALY:

The specific volume anomaly as defined by;

$$\delta = \alpha - \alpha_{35, 0, P}$$

δ is conventionally reported as $10^5 \delta$, and recorded to one decimal place (e. g., 0.001234 is recorded as 123.4).

SPECIAL CHARACTERS

† (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side refers to the appropriate level.

* (Asterisk) : to the left of the "Interpolated Data" marks standard depth levels according to the following specifications:

If three or more standard depth levels fall within an observed depth interval, the third and all consequent levels within that interval are preceded by an asterisk to indicate that more than two interpolations were carried out utilizing the same set of interpolation parabolas.

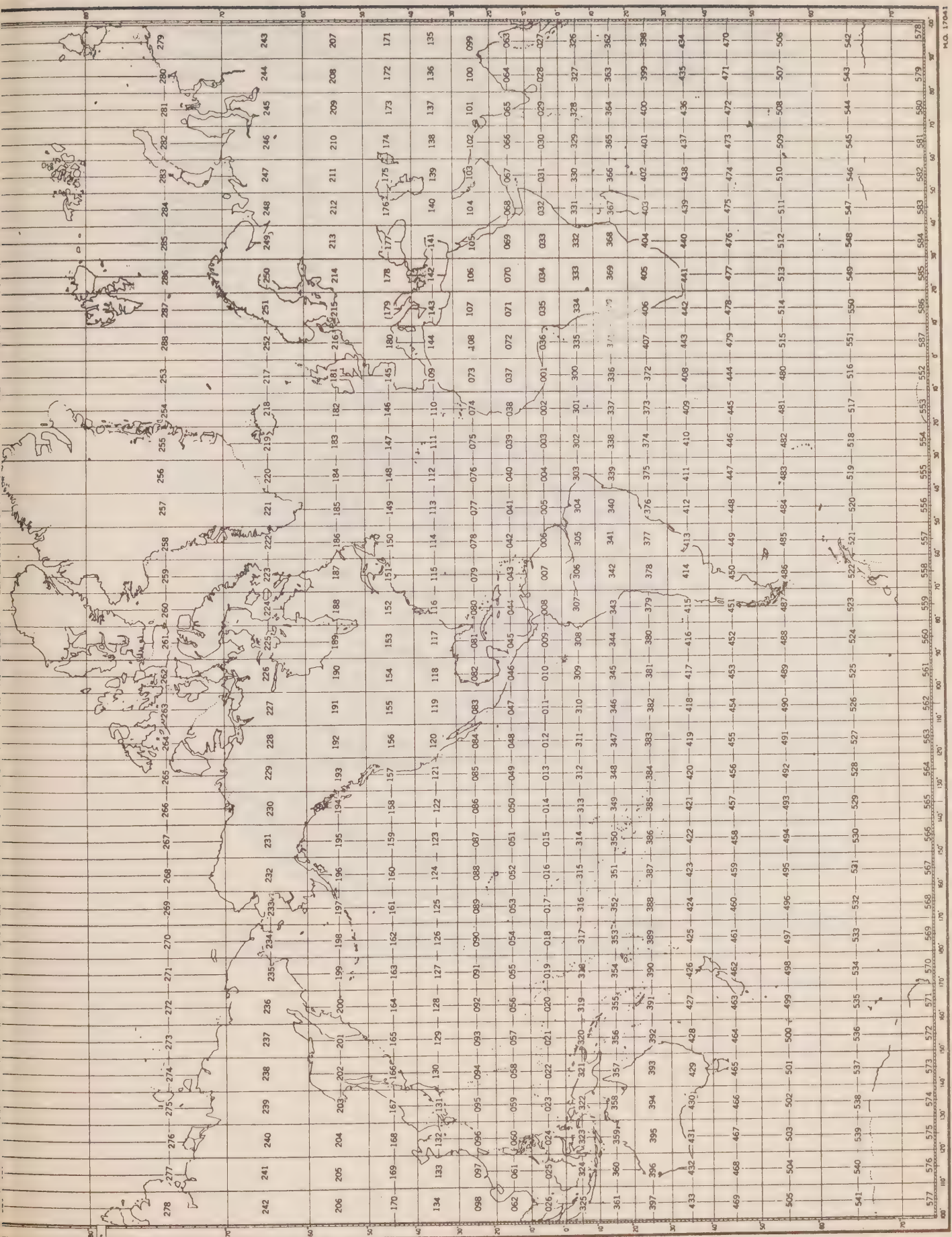


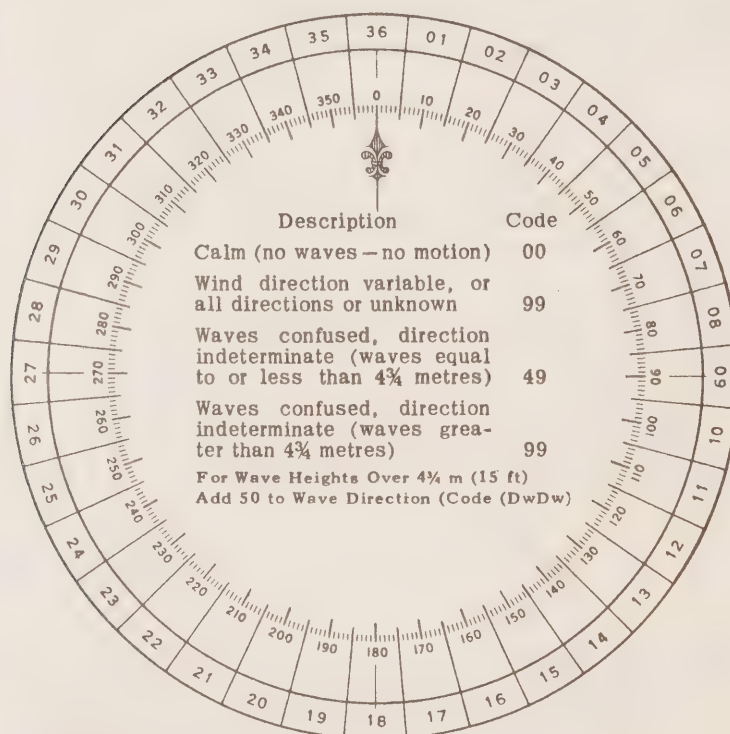
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (Pw)

(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (Hw)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than ¼ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	½ m (1½ ft)		1 5½ m (17½ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	1½ m (5 ft)		3 6½ m (21 ft)
4	2 m (6½ ft)		4 7 m (22½ ft)
5	2½ m (8 ft)		5 7½ m (24 ft)
6	3 m (9½ ft)		6 8 m (25½ ft)
7	3½ m (11 ft)		7 8½ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	4½ m (14 ft)		9 9½ m (30½ ft) or more
x	Height not determined		

Add
50
to
Dw Dw

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure ww			
No meteors except photometeors	00	Cloud development not observed or not observable	characteristic change of the state of sky during the past hour
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
	03	Clouds generally forming or developing	
Haze, dust, sand or smoke	04	Visibility reduced by smoke, e.g. veidt or forest fires, industrial smoke or volcanic ashes	
	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	
	11	Patches of	shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
	12	More of less continuous	
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precepitation at the time of observation	
	18	Squalls	at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel clouds	
ww = 20 - 29			
	20	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	not falling as shower(s)
	21	Drizzle (not freezing) or snow grains	
	22	Rain (not freezing)	
	23	Snow	
	24	Rain and snow or ice pellets, type (a)	
	25	Freezing drizzle or freezing rain	
	26	Shower(s) of rain	
	27	Shower(s) of snow, or of rain and snow	
	28	Shower(s) of hail, or of rain and hail	
	29	Fog or ice fog	
	30	Thunderstorm (with or without precipitation)	
ww = 30 - 39			
	31	Duststorm, sandstorm, drifting or blowing snow	
	32	Slight or moderate dust-storm or sand-storm	- has decreased during the preceding hour - no appreciable change during the preceding hour - has begun or has increased during the preceding hour
	33	Severe dust-storm or sand-storm	
	34		- has decreased during the preceding hour - no appreciable change during the preceding hour - has begun or has increased during the preceding hour
	35		
	36	Slight or moderate blowing snow	generally low (below eye level)
	37	Heavy drifting snow	
	38	Slight or moderate blowing snow	generally high (above eye level)
	39	Heavy blowing snow	
ww = 40 - 49			
	40	Fog or ice fog at the time of observation	
	41	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
	42	Fog or ice fog in patches	
	43	Fog or ice fog, sky visible	has become thinner during the preceding hour
	44	Fog or ice fog, sky invisible	
	45	Fog or ice fog, sky visible	no appreciable change during the preceding hour
	46	Fog or ice fog, sky invisible	
	47	Fog or ice fog, sky visible	has begun or has become thicker during the preceding hour
	48	Fog or ice fog, sky invisible	
	49	Fog, depositing rime, sky visible	
		Fog, depositing rime, sky invisible	

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

- | | | | |
|----|--|---|--------------------------------------|
| 50 | Drizzle, not freezing, intermittent | { | slight at time of observation |
| 51 | Drizzle, not freezing, continuous | | |
| 52 | Drizzle, not freezing, intermittent | { | moderate at time of observation |
| 53 | Drizzle, not freezing, continuous | | |
| 54 | Drizzle, not freezing, intermittent | { | heavy (dense) at time of observation |
| 55 | Drizzle, not freezing, continuous | | |
| 56 | Drizzle, freezing, slight | | |
| 57 | Drizzle, freezing, moderate or heavy (dense) | | |
| 58 | Drizzle and rain, slight | | |
| 59 | Drizzle and rain, moderate or heavy | | |

ww = 60 - 69 Rain

- | | | | |
|----|---|---|---------------------------------|
| 60 | Rain, not freezing, intermittent | { | slight at time of observation |
| 61 | Rain, not freezing, continuous | | |
| 62 | Rain, not freezing, intermittent | { | moderate at time of observation |
| 63 | Rain, not freezing, continuous | | |
| 64 | Rain, not freezing, intermittent | { | heavy at time of observation |
| 65 | Rain, not freezing, continuous | | |
| 66 | Rain, freezing, slight | | |
| 67 | Rain, freezing, moderate or heavy | | |
| 68 | Rain or drizzle and snow, slight | | |
| 69 | Rain or drizzle and snow, moderate or heavy | | |

70 - 79 Solid precipitation not in showers

- | | | | |
|----|---|---|---------------------------------|
| 70 | Intermittent fall of snow flakes | { | slight at time of observation |
| 71 | Continuous fall of snow flakes | | |
| 72 | Intermittent fall of snow flakes | { | moderate at time of observation |
| 73 | Continuous fall of snow flakes | | |
| 74 | Intermittent fall of snow flakes | { | heavy at time of observation |
| 75 | Continuous fall of snow flakes | | |
| 76 | Ice prisms (with or without fog) | | |
| 77 | Snow grains (with or without fog) | | |
| 78 | Isolated starlike snow crystals (with or without fog) | | |
| 79 | Ice pellets, type (a) | | |

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

- | | | | |
|----|--|---|---|
| 80 | Rain shower(s), slight | | |
| 81 | Rain shower(s), moderate or heavy | | |
| 82 | Rain shower(s), violent | | |
| 83 | Shower(s) of rain and snow mixed, slight | | |
| 84 | Shower(s) of rain and snow mixed, moderate or heavy | | |
| 85 | Snow shower(s), slight | | |
| 86 | Snow shower(s), moderate or heavy | | |
| 87 | Shower(s) of snow pellets or ice pellets, type (b), with or without rain or rain and snow mixed | { | - slight |
| 88 | | | |
| 89 | Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder | { | - moderate or heavy |
| 90 | | | |
| 91 | Slight rain at time of observation | { | thunderstorm during the preceding hour but not at time of observation |
| 92 | Moderate or heavy rain at time of observation | | |
| 93 | Slight snow, or rain and snow mixed or hail at time of observation | | |
| 94 | Moderate or heavy snow, or rain and snow mixed or hail at time of observation | | |
| 95 | Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation | { | thunderstorm at time of observation |
| 96 | Thunderstorm, slight or moderate, with hail at time of observation | | |
| 97 | Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation | | |
| 98 | Thunderstorm, combined with duststorm or sandstorm at time of observation | | |
| 99 | Thunderstorm, heavy, with hail at time of observation | | |

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, dust storm, sand storm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
90	Less than 50 metres (less than 55 yards)
91	50-200 metres (approx. 55-220 yards)
92	200-500 metres (approx. 220-550 yards)
93	500-1,000 metres (approx. 550 yards- $\frac{1}{2}$ n.m.)
94	1-2 km (approx. $\frac{3}{4}$ -1 n.m.)
95	2-4 km (approx. 1-2 n.m.)
96	4-10 km (approx. 2-6 n.m.)
97	10-20 km (approx. 6-12 n.m.)
98	20-50 km (approx. 12-30 n.m.)
99	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

SECTION III

Serial oceanographic data

C-REF-NO 002 YR 1963 DEPTH WAVES 1 24X1 AIR T 09.4 VIS 97
 CONS. NO 001 MONTH 4 MXSAMPD 10 WAVES 2 24X1 WET B 07.7 STN 001
 LAT 48-42 N DAY 10 NO.DPTH 17 WND-DIR 300 WW-CODE 02
 LON 126-40 W HR 03.7 W-COLOR WND-SPD 02 CLD-TPE 8
 MARSD SQ 157 W-TRNSP BARO 1013. CLD-AMT 1 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
037	0000	095 B	32229		2489	14850
037	0010	0926	32225		2493	14843
037	0020	0904	32222		2496	14836
037	0030	0892	32215		2497	14833
037	0050	0896 B	32337		2506	14839
037	0075	0856	32647		2537	14832
037	0100	0754 B	33198		2595	14804
037	0125	0740	33532		2623	14807
037	0150	0738 B	33769		2642	14814
037	0175	0716 B	33874		2653	14811
037	0200	0686 B	33916		2661	14804
037	0249	0648	33966		2670	14797
037	0299	0606	33986		2677	14789
037	0398	0556	34062		2689	14786
042	0500	0478	34108		2702	14772
042	0750	0395	34284		2724	14781
042	0996	0342	34400		2739	14801

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0950 B	32229		2489	14850	0000	00000	3067
0010	0926	32225		2493	14843	0031	00002	3036
0020	0904	32222		2496	14836	0061	00006	3007
0030	0892	32215		2497	14833	0091	00014	2996
0050	0896 B	32337		2506	14839	0151	00038	2914
0075	0856	32647		2537	14832	0220	00082	2630
0100	0754 B	33198		2595	14804	0280	00135	2081
0125	0740	33532		2623	14807	0329	00191	1817
0150	0738 B	33769		2642	14814	0372	00252	1642
0175	0716 B	33874		2653	14811	0412	00319	1538
0200	0686 B	33916		2661	14804	0450	00391	1470
0225	0665 B	33946		2666	14800	0487	00471	1424
0250	0647	33966		2670	14797	0522	00557	1388
0300	0605	33987		2677	14789	0591	00750	1327
0400	0554	34063		2689	14786	0719	01209	1219
0500	0478	34108		2702	14771	0836	01748	1104
0600	0434 C	3418 C		2712	14771	0943	02350	1012
0700	0404 B	3425 B		2721	14776	1042	03005	0934

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0364 F	3429 G		2728	14776	1133	03705	0865
1000	0342	34402		2739	14801	1298	05230	0773

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 49X1	AIR T 08.8	VIS 97
CONS. NO 002	MONTH 4	MXSAMPD	24	WAVES 2 25X1	WET B 07.7	STN 002
LAT 48-47 N	DAY 10	NO.DPTH	21	WND-DIR 990	WW-CODE 02	
LON 127-40 W	HR 07.8	W-COLOR		WND-SPD 01	CLD-TPE 8	
MARSD SQ 157		W-TRNSP		BARO 1013.	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
078	0000	090 B	32107		2488	14830
078	0010	0911	32003		2478	14834
078	0020	0892	32036		2483	14829
078	0030	0849	32105		2495	14815
078	0050	0853 B	32199		2502	14821
078	0075	0812	32839		2558	14818
078	0100	0768 B	33337		2604	14812
078	0125	0761	33643		2629	14817
078	0150	0756 B	33778		2640	14821
078	0175	0719 B	33873		2653	14812
078	0200	0689 B	33928		2661	14805
078	0250	0622	33949		2672	14787
078	0300	0575	33970		2679	14776
078	0400	0521 B	34050		2692	14772
085	0500	0477	34121		2703	14771
085	0750	0397	34281		2724	14781
085	1000	0344	34406		2739	14802
085	1250	0288	34475		2750	14821
085	1500	0248 B	34521		2757	14847
085	2000	0194	34605		2768	14909
085	2400	0177	34638		2772	14971

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0900 B	32107		2488	14830	0000	00000	3083
0010	0911	32003		2478	14834	0031	00002	3178
0020	0892	32036		2483	14829	0063	00006	3127
0030	0849	32105		2495	14815	0094	00014	3015
0050	0853 B	32199		2502	14821	0154	00039	2954
0075	0812	32839		2558	14818	0222	00081	2424
0100	0768 B	33337		2604	14812	0277	00131	1996
0125	0761	33643		2629	14817	0325	00185	1763
0150	0756 B	33778		2640	14821	0368	00246	1660
0175	0719 B	33873		2653	14812	0408	00313	1542
0200	0689 B	33928		2661	14805	0446	00385	1465
0225	0655 B	3395 C		2667	14796	0482	00464	1410
0250	0622	33949		2672	14787	0517	00550	1369
0300	0575	33970		2679	14776	0585	00739	1301
0400	0521 B	34050		2692	14772	0710	01188	1188

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0477	34121		2703	14771	0825	01718	1094
0600	0441	34189		2712	14774	0932	02316	1011
0700	0410	34251		2720	14778	1030	02973	0938
0800	0385	34310		2727	14785	1122	03678	0875
1000	0344	34406		2739	14802	1289	05212	0772
1200	0299	34464		2748	14817	1437	06882	0691
1500	0248 B	34521		2757	14847	1634	09611	0608
2000	0194	34605		2768	14909	1917	14652	0506

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 49X1	AIR T 08.3	VIS 97
CONS. NO 003	MONTH 4	MXSAMPD 24		WAVES 2 25X1	WET B 07.4	STN 003
LAT 48-51 N	DAY 10	NO.DPTH 21		WND-DIR 990	WW-CODE 02	
LON 128-40 W	HR 12.4	W-COLOR		WND-SPD 01	CLD-TPE 8	
MARSD SQ 157		W-TRNSP		BARO 1012.	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
124	0000	090 B	32369		2508	14833
124	0010	0906	32277		2500	14836
124	0020	0880	32298		2506	14828
124	0030	0863	32367		2514	14824
124	0050	0860 B	32414		2518	14827
124	0074	0842	32506		2528	14825
124	0099	0739 B	32975		2579	14795
124	0124	0722 B	33380		2614	14798
124	0149	0724 B	33725		2640	14808
124	0173	0709 B	33858		2653	14807
124	0198	0675 B	33914		2662	14799
124	0248	0626	33935		2670	14788
124	0297	0578	33956		2678	14777
124	0396	0513	34022		2691	14768
131	0496	0472	34110		2702	14768
131	0744	0392 B	34251		2722	14778
131	0993	0338	34392		2739	14799
131	1240	0291	34469		2749	14821
131	1490	0239 B	34522		2758	14841
131	1988	0196	34597		2767	14908
131	2387	0177	34628		2771	14968

I N T E R P O L A T E D

DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0900 B	32369		2508	14833	0000	00000	2888
0010	0906	32277		2500	14836	0029	00002	2967
0020	0880	32298		2506	14828	0059	00006	2915
0030	0863	32367		2514	14824	0088	00013	2841
0050	0860 B	32414		2518	14827	0145	00037	2805
0075	0838	3252 B		2530	14824	0214	00081	2697
0100	0737 B	32992		2581	14795	0276	00135	2211
0125	0722 B	33396		2615	14799	0327	00195	1894
0150	0724 B	33733		2641	14808	0372	00257	1649
0175	0707 B	33865		2654	14807	0412	00324	1532
0200	0673 B	33916		2662	14798	0450	00396	1453
0225	0647 B	3393 C		2667	14792	0486	00475	1410
0250	0624	33936		2670	14787	0521	00560	1382
0300	0576	33958		2678	14776	0589	00751	1311
0400	0511	34025		2691	14767	0715	01203	1194

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0470	34113		2703	14768	0831	01734	1092
0600	0435	3418 B		2712	14771	0937	02333	1014
*0700	0404 B	3423 B		2719	14775	1036	02993	0947
0800	0378 B	34286		2726	14782	1129	03706	0885
1000	0337	34395		2739	14799	1296	05248	0772
1200	0299	34459		2748	14817	1445	06922	0694
1500	0238 B	34524		2758	14842	1641	09625	0594
2000	0187 C	34598		2768	14906	1920	14594	0503

C-REF-NO 002 YR 1963 DEPTH WAVES 1 15X2 AIR T 08.8 VIS 97
 CONS. NO 004 MONTH 4 MXSAMPD 14 WAVES 2 25X1 WET B 07.2 STN C04
 LAT 49-01 N DAY 10 NO.DPTH 19 WND-DIR 150 WW-CODE 02
 LON 130-40 W HR 19.9 W-COLOR 10 WND-SPD 07 CLD-TPE 8
 MARSD SQ 158 W-TRNSP 08 BARO 1010. CLD-AMT 4 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
199	0000	092 B	32519		2517	14843
199	0010	0874	32429		2517	14826
199	0020	0866	32435		2519	14824
199	0030	0867	32448		2519	14827
199	0050	0852 B	32475		2524	14824
199	0074	0830	32470		2527	14820
199	0099	0786 B	32694		2551	14810
199	0124	0710	33297		2609	14792
199	0149	0689 B	33606		2636	14792
199	0174	0691 B	33828		2653	14800
199	0198	0643 B	33890		2664	14786
199	0247	0610	33920		2671	14781
199	0297	0548	33922		2679	14764
199	0396	0496	34012		2692	14760
206	0476	0467	34084		2701	14763
206	0719	0392	34247		2722	14774
206	0958	0334	34368		2737	14791
206	1200	0283	34445		2748	14810
206	1446	0245	34504		2756	14836

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0920 B	32519		2517	14843	0000	00000	2807
0010	0874	32429		2517	14826	0028	00001	2807
0020	0866	32435		2519	14824	0056	00006	2793
0030	0867	32448		2519	14827	0084	00013	2786
0050	0852 B	32475		2524	14824	0140	00036	2748
0075	0829	32473		2527	14820	0209	00080	2720
0100	0783 B	3272 B		2553	14809	0274	00138	2478
0125	0708	33313		2610	14792	0330	00201	1937
0150	0689 B	33617		2637	14793	0376	00265	1689
0175	0689 B	33832		2654	14800	0416	00333	1533
0200	0641 B	33893		2665	14785	0453	00404	1429
0225	0621 C	3392 B		2669	14782	0489	00482	1389
0250	0606	33920		2671	14780	0524	00567	1371
0300	0546	33924		2679	14764	0591	00756	1300
0400	0494	34016		2692	14760	0716	01203	1182
0500	0459	34103		2703	14763	0831	01730	1086

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0426	34175		2712	14767	0936	02325	1005
*0700	0397	34236		2720	14773	1034	02978	0935
0800	0371	34293		2728	14779	1126	03680	0871
1000	0324	34384		2739	14794	1291	05204	0766
1200	0283	34445		2748	14810	1439	06864	0687

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 18X3	AIR T 08.3	VIS 97
CONS. NO 005	MONTH 4	MXSAMPD 14		WAVES 2 24X2	WET B 07.2	STN 005
LAT 49-10 N	DAY 11	NO.DPTH 19		WND-DIR 180	WW-CODE 02	
LON 132-40 W	HR 03.4	W-COLOR		WND-SPD 08	CLD-TPE 6	
MARSD SQ 158		W-TRNSP		BARO 1003.	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
034	0000	083 B	32552		2533	14809
034	0010	0832	32553		2533	14811
034	0019	0828	32452		2526	14810
034	0029	0825	32459		2527	14811
034	0048	0800 B	32448		2529	14804
034	0071	0773 B	32452		2534	14797
034	0095	0771 B	32465		2535	14801
034	0119	0633 B	33057		2600	14758
034	0143	0613 B	33280		2620	14757
034	0166	0615 B	33567		2642	14765
034	0190	0619 B	33772		2658	14773
034	0235	0577	33868		2671	14765
034	0286	0522	33894		2680	14751
034	0379	0454	33942		2691	14739
039	0476	0423	34032		2701	14744
039	0714	0370	34238		2723	14764
039	0953	0318	34359		2738	14783
039	1198	0278	34447		2749	14808
039	1447	0242	34504		2756	14835

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0830 B	32552		2533	14809	0000	00000	2651
0010	0832	32553		2533	14811	0027	00001	2655
0020	0828	32450		2526	14810	0054	00006	2727
0030	0824	32459		2527	14810	0081	00013	2717
0050	0797 B	32448		2530	14803	0136	00035	2690
0075	0776 C	3243 G		2532	14799	0203	00078	2676
0100	0743 D	3258 I		2548	14792	0268	00137	2526
0125	0621 B	3313 G		2607	14755	0325	00201	1966
0150	0612 B	3337 C		2627	14759	0372	00267	1777
0175	0617 B	33656		2649	14769	0414	00337	1572
0200	0613 B	3381 E		2662	14773	0452	00410	1453
0225	0589	3387 E		2669	14768	0488	00488	1387
0250	0561	3388 B		2674	14761	0523	00572	1344
0300	0509	33900		2682	14749	0589	00758	1275
0400	0445	33960		2693	14739	0712	01198	1168
0500	0417	34055		2704	14745	0825	01719	1074

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0393	3415 B		2714	14753	0929	02306	0989
*0700	0373	34227		2722	14762	1025	02946	0914
0800	0350	34288		2729	14770	1115	03633	0852
1000	0310	34379		2740	14787	1277	05127	0754
1200	0276	34448		2749	14807	1422	06761	0677

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 13X8	AIR T 06.6	VIS 96
CONS. NO 006	MONTH 4	MXSAMPD 14		WAVES 2 13X6	WET B 06.6	STN 006
LAT 49-19 N	DAY 11	NO.DPTH 19		WND-DIR 130	WW-CODE 64	
LON 134-40 W	HR 11.4	W-COLOR		WND-SPD 16	CLD-TPE 6	
MARSD SQ 158		W-TRNSP		BARO 998.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
114	0000	077 B	32468		2535	14785
114	0010	0771	32471		2535	14787
114	0019	0770	32471		2536	14788
114	0029	0770	32470		2535	14789
114	0048	0772 B	32471		2535	14793
114	0072	0740 B	32474		2540	14785
114	0096	0733 B	32477		2541	14786
114	0119	0632	33047		2599	14757
114	0144	0592 B	33462		2637	14751
114	0167	0608 B	33741		2657	14765
114	0191	0600 B	33826		2665	14767
114	0239	0562	33869		2673	14760
114	0288	0508	33883		2680	14746
114	0387	0434	33951		2694	14732
118	0413	0424	33976		2697	14733
118	0703	0375	34181		2718	14763
118	0947	0333	34312		2733	14788
118	1195	0287	34406		2744	14811
118	1440	0248	34479		2754	14836

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0770 B	32468		2535	14785	0000	00000	2631
0010	0771	32471		2535	14787	0026	00001	2632
0020	0770	32471		2536	14788	0053	00005	2632
0030	0770	32470		2535	14790	0079	00012	2634
0050	0770 B	32471		2536	14793	0132	00034	2635
0075	0741 B	3246 F		2539	14786	0198	00076	2611
0100	0717 C	3256 I		2550	14781	0263	00134	2503
0125	0616	3316 B		2610	14754	0319	00197	1933
0150	0595 B	3355 B		2644	14754	0363	00260	1621
0175	0607 B	3378 C		2660	14766	0402	00324	1464
0200	0595 B	3384 B		2667	14766	0438	00394	1408
0225	0575	3387 C		2671	14763	0473	00470	1369
0250	0550	33873		2675	14757	0508	00553	1337
0300	0496	33889		2682	14743	0573	00738	1268
0400	0429	33963		2695	14732	0695	01173	1147
0500	0385	3404 B		2706	14732	0806	01685	1054

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0367	34107		2713	14741	0909	02266	0989
*0700	0374	34179		2718	14762	1007	02921	0952
0800	0359	34238		2724	14773	1101	03641	0898
1000	0323	34335		2735	14792	1273	05224	0801
1200	0288	34411		2745	14812	1427	06958	0718

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 09X4	AIR T 07.7	VIS 97
CONS. NO 007	MONTH 4	MXSAMPD	04	WAVES 2 27X4	WET B 06.3	STN 007
LAT 49-26 N	DAY 11	NO.DPTH	14	WND-DIR 090	WW-CODE 02	
LON 136-40 W	HR 18.4	W-COLOR		WND-SPD 15	CLD-TPE 6	
MARSD SQ 158		W-TRNSP		BARO 993.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
184	0000	074 B	32546		2546	14774
184	0009	0730	32488		2542	14771
184	0018	0728	32487		2543	14771
184	0027	0729	32485		2542	14773
184	0045	0732 B	32487		2542	14777
184	0067	0730 B	32486		2542	14780
184	0090	0705 B	32497		2547	14774
184	0112	0694	32531		2551	14774
184	0135	0658 B	33335		2619	14774
184	0157	0642 B	33659		2646	14776
184	0180	0619 B	33803		2661	14772
184	0223	0564	33881		2674	14758
184	0274	0513	33915		2682	14746
184	0361	0454	33998		2695	14737

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0740 B	32546		2546	14774	0000	00000	2533
0010	0730	32487		2542	14771	0026	00001	2565
0020	0728	32487		2543	14772	0051	00005	2564
0030	0730	32485		2542	14774	0077	00012	2569
0050	0733 B	32486		2542	14779	0129	00033	2575
0075	0722 B	32488		2544	14778	0194	00075	2563
0100	0701 B	3247 I		2545	14774	0258	00132	2554
0125	0674 B	3297 I		2588	14774	0317	00200	2151
0150	0646 B	3359 E		2640	14775	0365	00267	1655
0175	0624 B	3378 B		2658	14773	0405	00332	1486
0200	0594 B	3386 D		2668	14766	0441	00402	1395
0225	0562	33883		2674	14757	0476	00477	1341
0250	0535	3390 B		2679	14751	0509	00558	1298
0300	0491	3396 E		2688	14742	0572	00736	1211

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 18X2	AIR T 05.1	VIS 97
CONS. NO 008	MONTH 4	MXSAMPD	15	WAVES 2 08X4	WET B 04.7	STN 009
LAT 49-41 N	DAY 12	NO.DPTH	19	WND-DIR 180	WW-CODE 50	
LON 140-40 W	HR 08.9	W-COLOR		WND-SPD 05	CLD-TPE 7	
MARSD SQ 159		W-TRNSP		BARO 1000.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
089	0000	068 B	32476		2548	14749
089	0010	0678	32490		2550	14750
089	0019	0675	32492		2550	14751
089	0029	0678 B	32493		2550	14754
089	0049	0678 B	32494		2550	14757
089	0073	0667 B	32493		2551	14756
089	0098	0624 B	32517		2559	14744
089	0122	0496	33214		2629	14705
089	0146	0474 B	33510		2655	14703
089	0171	0488 B	33709		2669	14716
089	0195	0485 B	33815		2678	14720
089	0241	0440	33857		2686	14710
089	0292	0412	33893		2692	14707
089	0391	0388	34005		2703	14714
097	0495	0378	34123		2713	14729
097	0745	0333	34290		2731	14754
097	0995	0290	34394		2743	14778
097	1246	0258	34460		2751	14808
097	1493	0232	34508		2757	14839

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0680 B	32476		2548	14749	0000	00000	2508
0010	0678	32490		2550	14750	0025	00001	2497
0020	0675	32492		2550	14751	0050	00005	2493
0030	0678 B	32493		2550	14754	0075	00012	2497
0050	0678 B	32494		2550	14757	0126	00032	2499
0075	0666 B	3248 D		2550	14756	0188	00072	2496
0100	0613 B	3257 G		2564	14740	0250	00127	2368
0125	0489	3327 C		2634	14703	0301	00185	1710
0150	0476 B	33549		2658	14705	0341	00242	1484
0175	0489 B	33732		2671	14717	0377	00301	1364
0200	0481 B	3383 B		2679	14719	0411	00366	1288
0225	0458 B	3386 D		2684	14714	0442	00435	1243
0250	0434	33863		2687	14709	0473	00511	1213
0300	0409	33901		2693	14707	0533	00679	1163
0400	0387	34016		2704	14716	0646	01081	1063
0500	0377	34127		2714	14730	0749	01555	0977

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0361	3421 B		2722	14740	0844	02091	0908
*0700	0342	3427 B		2728	14750	0933	02684	0850
0800	0323	34317		2734	14759	1016	03326	0800
1000	0289	34396		2743	14779	1170	04741	0719
1200	0263	34450		2750	14802	1310	06319	0662
1500	0231	34509		2757	14839	1501	08971	0598

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 35X4	AIR T 07.2	VIS 97
CONS. NO 009	MONTH 4	MXSAMPD 15	WAVES 2 36X4	WET B 06.3	STN 010	
LAT 49-49 N	DAY 12	NO.DPTH 19	WND-DIR 350	WW-CODE 60		
LON 142-40 W	HR 20.2	W-COLOR 30	WND-SPD 10	CLD-TPE 7		
MARSD SQ 159		W-TRNSP 12	BARO 1006.	CLD-AMT 8	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
202	0000	063 B	32566		2562	14731
202	0009	0616	32538		2561	14726
202	0018	0613	32538		2562	14726
202	0027	0616	32536		2561	14729
202	0046	0618 B	32535		2561	14733
202	0067	0615 B	32535		2561	14735
202	0089	0612 B	32538		2562	14738
202	0112	0612	32554		2563	14742
202	0134	0491 B	33446		2648	14708
202	0159	0479 B	33684		2668	14710
202	0182	0463 B	33784		2678	14709
202	0228	0434	33839		2685	14705
202	0274	0412	33895		2692	14704
202	0376	0392	34003		2702	14714
206	0479	0376	34099		2712	14725
206	0719	0334	34276		2730	14750
206	0968	0296	34379		2742	14776
206	1216	0260	34455		2751	14803
206	1466	0235	34499		2756	14835

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0630 B	32566		2562	14731	0000	00000	2380
0010	0615	32537		2561	14726	0024	00001	2385
0020	0613	32538		2562	14727	0048	00005	2384
0030	0617	32536		2561	14730	0072	00011	2390
0050	0618 B	32535		2561	14733	0120	00031	2394
0075	0614 B	32535		2561	14736	0180	00069	2392
0100	0620 C	3249 I		2557	14742	0241	00124	2439
0125	0541 E	3307 I		2612	14722	0296	00186	1915
0150	0476 C	3365 I		2666	14707	0338	00245	1406
0175	0468 B	33762		2675	14709	0372	00302	1319
0200	0451 B	3382 D		2681	14707	0405	00364	1262
0225	0436	33838		2685	14705	0436	00433	1232
0250	0423	33866		2688	14704	0467	00507	1199
0300	0405	33924		2695	14705	0526	00674	1142
0400	0388	34026		2705	14716	0637	01070	1056
0500	0372	34117		2713	14727	0739	01543	0980

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0355	34197		2722	14738	0835	02081	0909
*0700	0337	34265		2729	14748	0924	02673	0848
0800	0321	34315		2734	14758	1007	03314	0800
1000	0291	34390		2743	14780	1161	04735	0724
1200	0262	34451		2750	14801	1301	06317	0660

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 2522	AIR T 06.1	VIS 97
CONS. NO 010	MONTH 4	MXSAMPD 20		WAVES 2 3236	WET B 03.3	STN
LAT 50-00 N	DAY 15	NO.DPTH 20		WND-DIR 250	WW-CODE 02	
LON 145-00 W	HR 19.8	W-COLOR 10		WND-SPD 02	CLD-TPE 1	
MARSD SQ 195		W-TRNSP 14		BARO 1023.	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
198	0000	058 B	32689	725	2578	14712
198	0009	0568	32538	712	2567	14707
198	0018	0568	32538	731 B	2567	14708
198	0027	0567 B	32514	753 B	2565	14709
198	0045	0571 B	32559	715 B	2568	14714
198	0067	0567 B	32555	754 B	2569	14716
198	0089	0550 B	32588	752 B	2573	14713
198	0111	0528	32642	756 B	2580	14708
198	0133	0380 B	33245	537 B	2643	14658
198	0156	0356 B	33427		2660	14654
198	0178	0351 B	33544		2670	14657
198	0221	0349 B	33732	371 B	2685	14666
198	0263	0369	33866	248 B	2694	14683
198	0360	0367	34002	175 B	2705	14700
204	0465	0363	34096	133 B	2713	14717
204	0702	0330	34288	089 B	2731	14745
204	0942	0292	34390	073 B	2743	14770
204	1186	0262	34453	078 B	2750	14799
204	1433	0235 B	34508	078 B	2757	14830
204	1951	0200	34584	164	2766	14903

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0580 B	32689	725	2578	14712	0000	00000	2229
0010	0568	3254 B	713	2567	14707	0023	00001	2332
0020	0568	32532	737 B	2567	14708	0046	00005	2335
0030	0568 B	3252 B	748 B	2566	14710	0070	00011	2346
0050	0571 B	3256 B	722 B	2568	14715	0117	00030	2321
0075	0562 B	32564	755 B	2570	14715	0175	00067	2310
0100	0547 C	3258 I	768 D	2573	14714	0233	00119	2284
0125	0434 E	3302 I	625 D	2620	14677	0285	00178	1836
0150	0355 C	3341 F	466 I	2658	14653	0327	00237	1470
0175	0351 B	33530	395 I	2669	14657	0362	00296	1374
0200	0348 B	33647	365 I	2678	14661	0396	00361	1285
0225	0351 B	33747	359 B	2686	14668	0427	00429	1214
0250	0362	33830	285 B	2692	14678	0457	00502	1165
0300	0372 B	3394 D	201 D	2699	14692	0515	00663	1100
0400	0366	34041	156 B	2708	14707	0622	01046	1022

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0359	34128	123 B	2716	14722	0722	01507	0958
0600	0347	3421 B	102 B	2724	14734	0815	02032	0889
*0700	0330	34287	089 B	2731	14745	0901	02609	0824
0800	0314	34338	079 B	2737	14755	0982	03232	0776
1000	0284	34407	073 B	2745	14777	1132	04612	0705
1200	0260	34456	078 B	2751	14801	1270	06166	0654
1500	0230	34520	092 C	2758	14839	1459	08779	0588
2000	0198	34589	175	2767	14911	1741	13828	0522

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 26X2	AIR T 07.1	VIS 92
CONS. NO 011	MONTH 4	MXSAMPD	41	WAVES 2 2623	WET B 06.5	STN
LAT 49-57 N	DAY 16	NO.DPTH	7	WND-DIR 260	WW-CODE 45	
LON 144-51 W	HR 19.2	W-COLOR	10	WND-SPD 01	CLD-TPE X	
MARSD SQ 159		W-TRNSP	15	BARO 1021.	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
192	0000	062 B	32469	697	2555	14725
192	1962	0196	34586	141	2766	14903
192	2252	0175	34636	146	2772	14944
192	2743	0162	34660	269	2775	15024
192	3434	0153	34680	307	2777	15140
192	3924	0151	34685	323	2778	15226
192	4120	0152	34698	333	2779	15261

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0620 B	32469	697	2555	14725	0000	00000	2441
2000	0193	34593	141	2767	14909	1740	13781	0513
2500	0166	3465 B	204 C	2774	14983	1986	19462	0454
3000	0158	34669	293 B	2776	15066	2216	25989	0446
3500	0152	34680	309	2777	15151	2444	33665	0446
4000	0151	34692	328	2778	15239	2673	42584	0449

C-REF-NO 002 YR 1963 DEPTH WAVES 1 34X1 AIR T 05.8 VIS 97
 CONS. NO 012 MONTH 4 MXSAMPD 04 WAVES 2 3143 WET B 03.7 STN
 LAT 50-00 N DAY 19 NO.DPTH 14 WND-DIR 340 WW-CODE 02
 LON 145-02 W HR 19.6 W-COLOR 10 WND-SPD 01 CLD-TPE 6
 MARSD SQ 195 W-TRNSP 16 BARO 1027. CLD-AMT 5 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
196	0000	057 B	32678	761 B	2578	14708
196	0010	0554	32591	771 B	2573	14702
196	0020	0549 B	32586	766 B	2573	14701
196	0030	0552	32581	765 B	2572	14704
196	0050	0548 B	32576	721 B	2572	14706
196	0075	0539	32578	728 B	2574	14706
196	0100	0529 B	32578	740 B	2575	14706
196	0125	0527	32581	726 B	2575	14710
196	0150	0366 B	33305	585 B	2650	14656
196	0175	0351 B	33495	447 B	2666	14656
196	0200	0355 B	33612	418 B	2675	14664
196	0250	0349 B	33744	292 B	2686	14671
196	0300	0360	33857	214 B	2694	14686
196	0396	0367	34000	156 B	2705	14706

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0570 B	32678	761 B	2578	14708	0000	00000	2226
0010	0554	32591	771 B	2573	14702	0023	00001	2274
0020	0549 B	32586	766 B	2573	14701	0046	00005	2274
0030	0552	32581	765 B	2572	14704	0068	00011	2282
0050	0548 B	32576	721 B	2572	14706	0114	00029	2283
0075	0539	32578	728 B	2574	14706	0172	00066	2274
0100	0529 B	32578	740 B	2575	14706	0229	00117	2265
0125	0527	32581	726 B	2575	14709	0286	00183	2263
0150	0366 B	33305	585 B	2650	14656	0334	00250	1556
0175	0351 B	33495	447 B	2666	14656	0371	00312	1400
0200	0355 B	33612	418 B	2675	14664	0405	00378	1318
0225	0352 B	3369 C	358 C	2681	14668	0438	00448	1260
0250	0349 B	33744	292 B	2686	14671	0469	00524	1217
0300	0360	33857	214 B	2694	14686	0529	00692	1146
0400	0368	34004	157 B	2705	14707	0640	01088	1051

C-REF-NO 002 YR 1963 DEPTH WAVES 1 2521 AIR T 06.1 VIS 97
 CONS. NO 013 MONTH 4 MXSAMPD 18 WAVES 2 2725 WET B 05.2 STN
 LAT 50-02 N DAY 23 NO.DPTH 20 WND-DIR 250 WW-CODE 02
 LON 144-56 W HR 18.8 W-COLOR 10 WND-SPD 02 CLD-TPE 0
 MARSD SQ 195 W-TRNSP 15 BARO 1022. CLD-AMT 4 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
188	0000	059 B	32620	724 B	2571	14715
188	0010	0583	32571	750 B	2568	14713
188	0019	0581 B	32570	749 B	2568	14714
188	0028	0581	32572	742 B	2568	14716
188	0048	0563 B	32579	744 B	2571	14712
188	0071	0560	32579	745 B	2571	14714
188	0095	0551 B	32579	711 B	2572	14714
188	0119	0440	32947	661 B	2614	14677
188	0143	0369 B	33384	554 B	2656	14657
188	0167	0358 B	33555	474 B	2670	14659
188	0190	0353 B	33631	356 B	2677	14661
188	0235	0351	33759	287 B	2687	14670
188	0285	0362	33858	199 B	2694	14684
188	0380	0372	34002	170 B	2704	14706
193	0461	0359	34057	134 B	2710	14714
193	0682	0338	34237	083 B	2726	14745
193	0911	0300	34364	071 B	2740	14768
193	1151	0267	34437	067 B	2749	14795
193	1393	0239	34489	083 B	2755	14824
193	1850	0204	34569	122	2765	14888

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0590 B	32620	724 B	2571	14715	0000	00000	2292
0010	0583	32571	750 B	2568	14713	0023	00001	2322
0020	0581 B	32570	748 B	2568	14714	0047	00005	2322
0030	0579	32573	742 B	2568	14715	0070	00011	2319
0050	0562 B	32579	745 B	2571	14712	0116	00030	2297
0075	0562	3257 D	741 B	2570	14716	0174	00067	2309
0100	0530 C	3264 D	704 B	2579	14708	0231	00118	2222
0125	0418	3307 E	636 B	2625	14670	0282	00176	1784
0150	0362 B	3345 C	532 B	2662	14656	0322	00232	1442
0175	0356 B	3359 B	432 B	2673	14660	0357	00291	1336
0200	0352 B	33662	332 C	2679	14663	0390	00354	1277
0225	0351	33733	293 C	2685	14667	0422	00422	1224
0250	0354	33792	259 B	2689	14674	0452	00497	1185
0300	0365	33886	189 B	2696	14688	0511	00661	1130
0400	0370	34018	161 B	2706	14708	0620	01053	1043

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0355	3409 B	121 B	2713	14720	0723	01524	0982
0600	0345	3417 B	096 B	2720	14733	0819	02066	0919
0700	0335	34249	081 B	2728	14747	0908	02664	0857
0800	0319	34310	074 B	2734	14757	0992	03309	0802
1000	0287	34396	068 B	2744	14778	1146	04723	0716
1200	0261	34449	069 B	2750	14801	1285	06296	0660
1500	0229	34514	086 B	2758	14838	1476	08929	0591

C-REF-NO 002 YR 1963 DEPTH WAVES 1 2522 AIR T 05.2 VIS 97
 CONS. NO 014 MONTH 4 MXSAMPD 04 WAVES 2 2856 WET B 03.8 STN
 LAT 49-56 N DAY 26 NO.DPTH 14 WND-DIR 250 WW-CODE 02
 LON 144-51 W HR 19.5 W-COLOR 10 WND-SPD 06 CLD-TPE 8
 MARSD SQ 159 W-TRNSP 15 BARO 1002. CLD-AMT 4 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
195	0000	059 B	32525	737 B	2563	14714
195	0010	0586	32575	770 B	2568	14715
195	0019	0584 B	32573	761 B	2568	14715
195	0029	0582	32582	755 B	2569	14716
195	0048	0560 B	32587	750 B	2572	14710
195	0072	0539	32592	743 B	2575	14706
195	0096	0534 B	32595	730 B	2576	14708
195	0120	0513	32653	724 B	2583	14704
195	0144	0370 B	33333	595 B	2651	14657
195	0169	0359 B	33537	488 B	2669	14659
195	0192	0355 B	33667	353 B	2679	14663
195	0241	0349	33776	284 B	2689	14670
195	0290	0364	33870	209 B	2695	14686
195	0384	0370	34014	151 B	2705	14706

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0590 B	32525	737 B	2563	14714	0000	00000	2364
0010	0586	32575	770 B	2568	14715	0024	00001	2323
0020	0584 B	32574	760 B	2568	14715	0047	00005	2322
0030	0581	32582	755 B	2569	14716	0070	00011	2313
0050	0558 B	32587	750 B	2572	14710	0117	00030	2285
0075	0538	32591	741 B	2575	14706	0174	00066	2263
0100	0535 B	3258 G	733 B	2574	14709	0231	00118	2270
0125	0483 D	3279 I	701 B	2597	14694	0285	00180	2059
0150	0361 C	3341 G	570 B	2658	14655	0330	00242	1473
0175	0358 B	33576	451 B	2672	14660	0365	00301	1346
0200	0353 B	3369 C	332 C	2682	14664	0398	00364	1255
0225	0350	3375 D	291 D	2687	14667	0429	00432	1208
0250	0351	33794	269 B	2690	14673	0459	00505	1181
0300	0358 C	33888	208 C	2697	14685	0517	00669	1121

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 30X4	AIR T 05.5	VIS 97
CONS. NO 015	MONTH 4	MXSAMPD 20		WAVES 2 49X5	WET B 03.8	STN
LAT 50-02 N	DAY 29	NO.DPTH 20		WND-DIR 300	WW-CODE 02	
LON 144-52 W	HR 19.6	W-COLOR 10		WND-SPD 09	CLD-TPE 8	
MARSD SQ 195		W-TRNSP 15		BARO 1096.	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
196	0000	058 B	32675	745 B	2576	14712
196	0009	0576	32598	719 B	2571	14711
196	0018	0574 B	32596	740 B	2571	14711
196	0028	0576	32598	750 B	2571	14714
196	0046	0547 B	32593	731 B	2574	14705
196	0069	0538	32587	722 B	2574	14705
196	0092	0536 B	32600	715 B	2576	14708
196	0115	0521	32620	666 B	2579	14706
196	0138	0396 B	33137	564 B	2633	14664
196	0162	0352 B	33397	481 B	2658	14653
196	0184	0351 B	33581	323 B	2673	14659
196	0227	0349	33753	292 B	2687	14667
196	0275	0365	33853	203 B	2693	14684
196	0371	0374	33996	167 B	2704	14705
203	0476	0357	34096	136 B	2713	14717
203	0724	0327	34271	088 B	2730	14747
203	0956	0293	34371	079 B	2741	14773
203	1204	0261	34444	075 B	2750	14802
203	1454	0235	34499	078 B	2756	14833
203	1954	0198	34572	110	2765	14903

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0580 B	32675	745 B	2576	14712	0000	00000	2240
0010	0576	32596	720 B	2571	14711	0023	00001	2295
0020	0575 B	32596	743 B	2571	14712	0046	00005	2295
0030	0573	32598	749 B	2571	14713	0069	00011	2293
0050	0544 B	32591	729 B	2574	14704	0115	00029	2267
0075	0538	32589	722 B	2575	14706	0172	00066	2264
0100	0538 B	3258 I	703 B	2574	14710	0229	00117	2275
0125	0468 D	3283 I	624 B	2601	14689	0283	00179	2013
0150	0366 B	3329 E	527 B	2648	14656	0328	00242	1568
0175	0349 B	33513	387 C	2668	14656	0365	00304	1385
0200	0349 B	3366 C	293 F	2680	14662	0399	00368	1274
0225	0349	33749	290 B	2686	14667	0430	00436	1211
0250	0356	3381 B	250 B	2690	14675	0460	00510	1175
0300	0370	33896	184 C	2696	14690	0518	00673	1127
0400	0371	34027	158 B	2706	14709	0627	01064	1037

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0500	0354	34116	130 B	2715	14720	0728	01528	0961
0600	0342	34193	107 B	2722	14732	0822	02057	0898
*0700	0330	34257	091 B	2729	14744	0910	02645	0845
0800	0316	34309	083 B	2734	14756	0993	03285	0799
1000	0287	34386	078 B	2743	14778	1147	04704	0723
1200	0261	34443	075 B	2750	14801	1288	06291	0665
1500	0230	34510	080 B	2758	14839	1480	08944	0597
2000	0196	34576	115	2766	14910	1766	14062	0529

C-REF-NO 002 YR 1963 DEPTH WAVES 1 49X0 AIR T 05.5 VIS 97
 CONS. NO 016 MONTH 5 MXSAMPD 04 WAVES 2 3146 WET B 03.8 STN
 LAT 49-59 N DAY 03 NO.DPTH 14 WND-DIR 990 WW-CODE 02
 LON 144-59 W HR 19.8 W-COLOR 10 WND-SPD 01 CLD-TPE 8
 MARSD SQ 159 W-TRNSP 13 BARO 1008. CLD-AMT 4 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
198	0000	063 B	32636	741 B	2567	14732
198	0010	0608	32577	755 B	2565	14724
198	0020	0602 B	32579	750 B	2566	14723
198	0030	0605	32580	753 B	2566	14726
198	0050	0600 B	32581	730 B	2567	14727
198	0074	0548	32603	715 B	2575	14710
198	0099	0530 B	32648	699 B	2580	14707
198	0124	0459	32884	657 B	2607	14685
198	0149	0368 B	33329	586 B	2651	14657
198	0174	0355 B	33557	469 B	2671	14659
198	0198	0348 B	33651	343 B	2679	14661
198	0247	0350	33792	286 B	2690	14672
198	0297	0348	33860	198 B	2695	14680
198	0393	0376	34037	166 B	2707	14710

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0630 B	32636	741 B	2567	14732	0000	00000	2327
0010	0608	32577	755 B	2565	14724	0024	00001	2347
0020	0602 B	32579	750 B	2566	14723	0047	00005	2339
0030	0605	32580	753 B	2566	14726	0071	00011	2343
0050	0600 B	32581	730 B	2567	14727	0118	00030	2339
0075	0547	32603	715 B	2575	14710	0176	00067	2265
0100	0528 B	32654	698 B	2581	14707	0232	00118	2207
0125	0455	3290 B	655 B	2609	14684	0284	00178	1945
0150	0367 B	33341	582 B	2652	14657	0328	00239	1529
0175	0355 B	33562	463 B	2671	14659	0364	00299	1353
0200	0348 B	33658	338 B	2679	14661	0397	00363	1277
0225	0348 B	33737	297 D	2686	14666	0429	00431	1219
0250	0350	33797	280 B	2690	14672	0459	00505	1178
0300	0352 B	3389 H	215 E	2697	14683	0517	00668	1115
0400	0379	3405 B	165 B	2707	14712	0625	01055	1032

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 26X1	AIR T 06.3	VIS 94
CONS. NO 017	MONTH 5	MXSAMPD 19		WAVES 2 49X2	WET B 06.1	STN
LAT 49-58 N	DAY 07	NO.DPTH 20		WND-DIR 260	WW-CODE 51	
LON 144-53 W	HR 18.8	W-COLOR 10		WND-SPD 03	CLD-TPE 7	
MARSD SQ 159		W-TRNSP 15		BARO 1014.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
188	0000	066 B	32619	689 B	2562	14743
188	0010	0650	32593	709 B	2561	14741
188	0020	0615 B	32599	705 B	2566	14728
188	0030	0608	32606	705 B	2568	14727
188	0049	0587 B	32609	709 B	2570	14722
188	0074	0541	32616	699 B	2576	14707
188	0099	0520 B	32624	684 B	2579	14703
188	0123	0412	33123	627 B	2631	14669
188	0148	0370 B	33454	552 B	2661	14659
188	0173	0376 B	33622	450 B	2674	14668
188	0197	0371 B	33689	382 B	2680	14671
188	0249	0352 B	33772	257 B	2688	14673
188	0296	0368	33882	201 B	2695	14689
188	0395	0372	34016	180 B	2705	14709
194	0476	0362	34099	147 B	2713	14719
194	0713	0333	34274	096 B	2730	14748
194	0949	0296	34378	071 B	2741	14773
194	1191	0262	34451	083 B	2750	14800
194	1438	0234	34507	092 B	2757	14830
194	1941	0200	34577	123	2765	14901

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0660 B	32619	689 B	2562	14743	0000	00000	2377
0010	0650	32593	709 B	2561	14741	0024	00001	2385
0020	0615 B	32599	705 B	2566	14728	0048	00005	2340
0030	0608	32606	705 B	2568	14727	0071	00011	2327
0050	0585 B	32609	709 B	2571	14721	0118	00030	2300
0075	0541	3261 B	699 B	2576	14707	0175	00067	2251
0100	0516 B	3264 B	682 B	2581	14702	0231	00117	2203
0125	0406	33156	622 B	2634	14667	0280	00173	1705
0150	0370 B	33472	544 B	2662	14660	0320	00228	1434
0175	0376 B	33630	444 B	2674	14669	0355	00286	1323
0200	0370 B	33694	373 B	2680	14671	0387	00349	1270
0225	0359 B	3374 C	309 B	2684	14671	0419	00417	1230
0250	0352 B	33774	255 B	2688	14673	0449	00492	1197
0300	0369	33889	199 B	2696	14690	0508	00657	1131
0400	0372	34022	178 B	2706	14709	0618	01049	1042

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0359	34121	140 B	2715	14722	0719	01516	0963
0600	0347	34201	114 B	2723	14734	0813	02045	0898
*0700	0335	34267	098 B	2729	14747	0901	02632	0843
0800	0320	34318	083 B	2735	14757	0984	03271	0796
1000	0288	34396	072 B	2744	14778	1137	04681	0718
1200	0261	34453	083 B	2751	14801	1276	06252	0657
1500	0228	34520	097 B	2759	14838	1465	08866	0586

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 30X1	AIR T 06.1	VIS 97
CONS. NO 018	MONTH 5	MXSAMPD 42		WAVES 2 30X2	WET B 04.4	STN
LAT 49-56 N	DAY 08	NO-DPTH 7		WND-DIR 300	WW-CODE 02	
LON 144-53 W	HR 20.0	W-COLOR 10		WND-SPD 04	CLD-TPE 8	
MARSD SQ 159		W-TRNSP 16		BARO 1011.	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
200	0000	065 B	32629	677 B	2564	14740
200	2000	0199 B	34574	165	2765	14911
200	2500	0176	34632	206	2772	14987
200	3000	0162		264 B		
200	3500	0152		313		
200	4000	0152 B		319		
200	4200	0153		338 B		

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0650 B	32629	677 B	2564	14740	0000	00000	2357
2000	0199 B	34574	165	2765	14911	1752	14000	0534
2500	0176	34632	206	2772	14987	2011	19978	0482
3000	0162		264 B					
3500	0152		313					
4000	0152 B		319					

C-REF-NO 002 YR 1963 DEPTH WAVES 1 15X1 AIR T 09.9 VIS 97
 CONS. NO 019 MONTH 5 MXSAMPD 20 WAVES 2 1146 WET B 08.3 STN
 LAT 50-00 N DAY 18 NO.DPTH 20 WND-DIR 150 WW-CODE 01
 LON 144-56 W HR 19.3 W-COLOR 10 WND-SPD 01 CLD-TPE 8
 MARSD SQ 195 W-TRNSP 15 BARO 1008. CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
193	0000	076 B	32470	658 B	2537	14781
193	0010	0658	32591	746 B	2560	14744
193	0020	0654 B	32600	747 B	2561	14744
193	0030	0657 B	32606	750 B	2561	14747
193	0050	0654 B	32617	751 B	2563	14749
193	0075	0576	32611	747 B	2572	14722
193	0100	0540 B	32613	747 B	2576	14711
193	0125	0511	32705	623 B	2587	14705
193	0150	0374 B	33323	584 B	2650	14660
193	0175	0358 B	33555	465 B	2670	14660
193	0200	0354 B	33689	354 B	2681	14664
193	0250	0361	33824	242 B	2691	14677
193	0300	0366	33899	199 B	2697	14689
193	0398	0368	34039	145 B	2708	14708
206	0498	0357	34151	101 B	2718	14721
206	0748	0319 B	34303	072 B	2733	14748
206	0997	0286	34400	070 B	2744	14777
206	1245	0257	34467	066 B	2752	14807
206	1483	0230	34516	085 B	2758	14836
206	1980	0196	34593	134	2767	14907

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0760 B	32470	658 B	2537	14781	0000	00000	2616
0010	0658	32591	746 B	2560	14744	0025	00001	2396
0020	0654 B	32600	747 B	2561	14744	0049	00005	2386
0030	0657 B	32606	750 B	2561	14747	0073	00011	2386
0050	0654 B	32617	751 B	2563	14749	0121	00031	2377
0075	0576	32611	747 B	2572	14722	0180	00068	2291
0100	0540 B	32613	747 B	2576	14711	0237	00120	2251
0125	0511	32705	623 B	2587	14705	0293	00183	2153
0150	0374 B	33323	584 B	2650	14660	0339	00248	1550
0175	0358 B	33555	465 B	2670	14660	0376	00309	1362
0200	0354 B	33689	354 B	2681	14664	0409	00372	1259
0225	0356 B	3377 C	285 B	2688	14671	0440	00440	1202
0250	0361	33824	242 B	2691	14677	0470	00513	1168
0300	0366	33899	199 B	2697	14689	0527	00675	1121
0400	0368	34042	144 B	2708	14708	0636	01062	1024

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0357	34153	100 B	2718	14721	0735	01517	0937
0600	0342	3423 C	081 B	2725	14733	0826	02033	0873
*0700	0327 B	3428 B	072 B	2731	14743	0912	02604	0823
0800	0312 B	34327	071 B	2736	14754	0993	03229	0781
1000	0286	34401	070 B	2744	14777	1144	04620	0711
1200	0262	34457	066 B	2751	14801	1282	06182	0656
1500	0230	34521	081 B	2759	14839	1472	08797	0588
2000	0195	34595	137	2767	14910	1751	13801	0514

C-REF-NO 002 YR 1963 DEPTH WAVES 1 10X5 AIR T 08.8 VIS 95
 CONS. NO 020 MONTH 5 MXSAMPD 39 WAVES 2 10X4 WET B 07.7 STN
 LAT 49-59 N DAY 21 NO.DPTH 7 WND-DIR 100 WW-CODE 50
 LON 145-01 W HR 00.8 W-COLOR 10 WND-SPD 14 CLD-TPE 7
 MARSD SQ 159 W-TRNSP 15 BARO 1012. CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
008	0000	075 B	32698		2556	14780
008	1840	0206	34565	099	2764	14887
008	2282	0183	34617	182	2770	14953
008	2761	0166	34651	249	2774	15028
008	3253	0155 B	34682	288	2777	15109
008	3748	0152		317 B		
008	3944	0151		325		

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0750 B	32698		2556	14780	0000	00000	2433
2000	0197	34586	126	2766	14910	1753	13850	0523
2500	0174	34634	216	2772	14987	2008	19745	0478
3000	0160	34669	270	2776	15067	2245	26455	0449
3500	0153		304 B					

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 00X0	AIR T 08.8	VIS 98
CONS. NO 021	MONTH 5	MXSAMPD	20	WAVES 2 11X1	WET B 07.2	STN
LAT 50-02 N	DAY 21	NO.DPTH	20	WND-DIR 990	WW-CODE 02	
LON 145-00 W	HR 18.8	W-COLOR	30	WND-SPD 01	CLO-TPE 6	
MARSD SQ 195		W-TRNSP	16	BARO 1013.	CLO-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
188	0000	077 B	32611	697 B	2546	14787
188	0010	0701	32574	726 B	2553	14761
188	0020	0696 B	32575	716 B	2554	14760
188	0030	0679	32577	728 B	2556	14755
188	0050	0648 B	32580	724 B	2561	14746
188	0075	0539	32602	732 B	2576	14707
188	0100	0523 B	32618	723 B	2579	14704
188	0125	0496	32706	699 B	2589	14698
188	0150	0369 B	33313	594 B	2650	14657
188	0175	0356 B	33522	484 B	2668	14659
188	0200	0353 B	33657	397 B	2679	14663
188	0248	0349	33783	250 B	2689	14671
188	0299	0356	33892	208 B	2697	14684
188	0397	0365	34028	136 B	2707	14706
194	0499	0359	34122	104 B	2715	14722
194	0750	0321	34282	082 B	2731	14749
194	0995	0289	34383	073 B	2742	14778
194	1245	0256	34457	067 B	2751	14806
194	1498	0230	34512	094 B	2758	14839
194	2000	0195	34586	137	2767	14909

#WAVES NOT COMPATIBLE WITH WIND

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0770 B	32611	697 B	2546	14787	0000	00000	2524
0010	0701	32574	726 B	2553	14761	0025	00001	2463
0020	0696 B	32575	716 B	2554	14760	0050	00005	2457
0030	0679	32577	728 B	2556	14755	0074	00011	2435
0050	0648 B	32580	724 B	2561	14746	0123	00031	2397
0075	0539	32602	732 B	2576	14706	0182	00069	2256
0100	0523 B	32618	723 B	2579	14704	0238	00119	2229
0125	0496	32706	699 B	2589	14698	0293	00182	2135
0150	0369 B	33313	594 B	2650	14657	0339	00247	1553
0175	0356 B	33522	484 B	2668	14659	0376	00308	1385
0200	0353 B	33657	397 B	2679	14663	0410	00373	1282
0225	0350	3374 C	312 B	2685	14667	0442	00442	1223
0250	0349	33788	247 B	2690	14672	0472	00516	1184
0300	0356	33894	207 B	2697	14684	0530	00679	1115

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0400	0365	34031	135 B	2707	14707	0638	01066	1028
0500	0359	34123	104 B	2715	14722	0739	01528	0961
0600	0345	34196	090 B	2722	14734	0833	02058	0900
*0700	0330	34256	083 B	2729	14744	0921	02647	0846
0800	0314	34306	080 B	2734	14755	1004	03287	0799
1000	0288	34385	073 B	2743	14778	1158	04709	0726
1200	0262	34445	067 B	2750	14801	1299	06296	0663
1500	0229	34514	085 C	2758	14839	1490	08935	0592
2000	0195	34586	137	2767	14909	1773	13990	0521

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 18X3	AIR T 08.3	VIS 97
CONS. NO 022	MONTH 5	MXSAMPD	14	WAVES 2 25X4	WET B 07.2	STN 010
LAT 49-49 N	DAY 24	NO. DPTH	19	WND-DIR 180	WW-CODE 02	
LON 142-40 W	HR 14.3	W-COLOR		WND-SPD 05	CLD-TPE 6	
MARSD SQ 159		W-TRNSP		BARO 1023.	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
143	0000	077 B	32536		2541	14786
143	0009	0757	32511		2540	14782
143	0019	0755 B	32510		2541	14783
143	0029	0711 B	32512		2547	14767
143	0048	0638 B	32542		2559	14741
143	0071	0575	32557		2568	14720
143	0095	0543 B	32645		2578	14712
143	0119	0481	33093		2621	14696
143	0143	0454 B	33448		2652	14694
143	0167	0485 B	33716		2670	14714
143	0191	0485 B	33815		2678	14720
143	0238	0436	33861		2687	14707
143	0286	0411	33914		2693	14706
143	0379	0391	34031		2705	14714
148	0474	0379	34101		2711	14726
148	0712	0342	34279		2729	14752
148	0952	0295	34386		2742	14773
148	1195	0264	34456		2751	14801
148	1448	0235	34514		2758	14832

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0770 B	32536		2541	14786	0000	00000	2580
0010	0757	32510		2540	14782	0026	00001	2584
0020	0751 B	32510		2541	14781	0052	00005	2578
0030	0707 B	32513		2548	14765	0078	00012	2518
0050	0631 B	32542		2560	14739	0127	00032	2405
0075	0570	3256 C		2568	14718	0187	00070	2324
0100	0530 B	3273 F		2586	14709	0243	00120	2154
0125	0470	33190		2630	14694	0292	00176	1745
0150	0462 B	3354 B		2658	14699	0333	00233	1476
0175	0488 B	3376 B		2673	14717	0368	00292	1341
0200	0477 B	3383 C		2680	14718	0401	00356	1279
0225	0452 B	3386 C		2685	14712	0433	00425	1234
0250	0428	33874		2688	14706	0463	00499	1199
0300	0407	33933		2695	14706	0522	00665	1137
0400	0388	34049		2706	14717	0632	01058	1039
0500	0375	34122		2714	14729	0734	01527	0979

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0361	3420 B		2721	14740	0830	02066	0914
*0700	0344	34271		2728	14751	0919	02660	0850
0800	0324	34325		2735	14760	1002	03301	0796
1000	0288	34402		2744	14778	1155	04707	0713
1200	0261	3446 B		2751	14801	1293	06265	0651

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 20X3	AIR T 09.9	VIS 97
CONS. NO 023	MONTH 5	MXSAMPD	15	WAVES 2 25X2	WET B 08.3	STN 009
LAT 49-41 N	DAY 24	NO.DPTH	19	WND-DIR 200	WW-CODE 02	
LON 140-40 W	HR 21.9	W-COLOR	10	WND-SPD 05	CLO-TPE 6	
MARSD SQ 159		W-TRNSP	17	BARO 1023.	CLO-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
219	0000	086 B	32546		2528	14820
219	0010	0804 B	32515		2534	14800
219	0020	0778 B	32507		2537	14792
219	0030	0747	32513		2542	14781
219	0050	0707 B	32516		2548	14769
219	0075	0616	32560		2563	14737
219	0100	0589 B	32591		2569	14731
219	0125	0486	33197		2629	14701
219	0149	0458 B	33465		2653	14697
219	0174	0454 B	33690		2671	14702
219	0199	0453 B	33802		2680	14707
219	0243	0437 B	33869		2687	14709
219	0298	0413 B	33898		2692	14708
219	0392	0388	34012		2704	14715
224	0498	0373 B	34106		2712	14727
224	0746	0333	34297		2732	14754
224	0992	0292	34393		2743	14779
224	1240	0260				
224	1495	0234				

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0860 B	32546		2528	14820	0000	00000	2698
0010	0804 B	32515		2534	14800	0027	00001	2644
0020	0778 B	32507		2537	14792	0053	00005	2616
0030	0747	32513		2542	14781	0079	00012	2571
0050	0707 B	32516		2548	14769	0131	00033	2519
0075	0616	32560		2563	14737	0192	00072	2376
0100	0589 B	32591		2569	14731	0251	00125	2324
0125	0486	33197		2629	14701	0303	00184	1757
0150	0458 B	33476		2654	14697	0344	00241	1520
0175	0454 B	33696		2672	14702	0380	00302	1353
0200	0453 B	33805		2680	14707	0413	00365	1273
0225	0445 B	3385 C		2685	14709	0445	00434	1230
0250	0434 B	33874		2688	14709	0476	00509	1206
0300	0412 B	33900		2692	14708	0535	00677	1167
0400	0387	34020		2704	14716	0648	01079	1059
0500	0373 B	34108		2713	14727	0751	01554	0987

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0357 B	34193		2721	14738	0847	02096	0915
*0700	0341	34267		2728	14749	0936	02690	0850
0800	0324	3432 C		2734	14759	1020	03332	0800

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 2221	AIR T 11.6	VIS 97
CONS. NO 024	MONTH 5	MXSAMPD 05		WAVES 2 2532	WET B 10.5	STN 008
LAT 49-33 N	DAY 25	NO.DPTH 15		WND-DIR 220	WW-CODE 02	
LON 138-40 W	HR 05.0	W-COLOR		WND-SPD 02	CLD-TPE 6	
MARSD SQ 158		W-TRNSP		BARO 1025.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
050	0000	089 B	32606		2528	14832
050	0010	0884	32588		2528	14832
050	0020	0860 B	32524		2526	14823
050	0029	0825	32511		2531	14811
050	0049	0728 B	32553		2548	14777
050	0073	0698	32518		2549	14769
050	0098	0665 B	32532		2555	14760
050	0122	0548	33142		2617	14725
050	0147	0539 B	33504		2647	14730
050	0171	0556 B	33720		2662	14744
050	0196	0542 B	33821		2671	14744
050	0244	0477	33858		2682	14726
050	0293	0441	33965		2694	14720
050	0388	0410 B	34085		2707	14724
050	0490	0388	34107		2711	14732

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0890 B	32606		2528	14832	0000	00000	2697
0010	0884	32588		2528	14832	0027	00001	2704
0020	0860 B	32524		2526	14823	0054	00006	2718
0030	0820	32513		2532	14809	0082	00013	2671
0050	0726 B	32552		2548	14777	0134	00034	2517
0075	0697	3251 D		2548	14769	0197	00074	2517
0100	0655 B	3258 E		2559	14757	0259	00130	2414
0125	0543	3320 B		2622	14724	0312	00190	1821
0150	0541 B	33538		2649	14732	0355	00250	1566
0175	0555 B	33742		2664	14745	0393	00313	1432
0200	0537 B	3383 B		2672	14742	0428	00380	1351
0225	0504 B	3385 F		2678	14733	0461	00453	1297
0250	0471	33870		2683	14724	0493	00531	1249
0300	0438	33977		2696	14720	0553	00700	1137
0400	0400 B	34096		2709	14722	0662	01088	1016
0500	0388	34102		2711	14734	0764	01560	1007

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 22X1	AIR T 10.5	VIS 97
CONS. NO 025	MONTH 5	MXSAMPD 20		WAVES 2 25X2	WET B 08.8	STN 007
LAT 49-26 N	DAY 25	NO.DPTH 20		WND-DIR 220	WW-CODE 02	
LON 136-40 W	HR 11.3	W-COLOR		WND-SPD 02	CLD-TPE 6	
MARSD SQ 158		W-TRNSP		BARO 1026.	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
113	0000	099 B	32578		2510	14869
113	0010	0978 B	32508		2507	14866
113	0020	0873 B	32508		2523	14828
113	0030	0842 B	32509		2528	14818
113	0050	0789 B	32497		2535	14801
113	0075	0769	32510		2539	14797
113	0100	0621 B	32971		2595	14749
113	0125	0595	33459		2636	14749
113	0150	0607 B	33684		2653	14761
113	0175	0594 B	33816		2665	14761
113	0200	0572 B	33857		2671	14757
113	0250	0503	33882		2681	14738
113	0300	0463	33932		2689	14730
113	0400	0413	33997		2700	14726
119	0500	0397	34084		2708	14737
119	0750	0354	34276		2728	14763
119	1000	0311	34389		2741	14788
119	1250	0266	34469		2751	14812
119	1500	0232	34516		2758	14840
119	2000	0194	34601		2768	14909

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0990 B	32578		2510	14869	0000	00000	2870
0010	0978 B	32508		2507	14866	0029	00001	2905
0020	0873 B	32508		2523	14828	0057	00006	2749
0030	0842 B	32509		2528	14818	0085	00013	2705
0050	0789 B	32497		2535	14801	0139	00035	2643
0075	0769	32510		2539	14797	0205	00077	2609
0100	0621 B	32971		2595	14749	0264	00129	2078
0125	0595	33459		2636	14749	0311	00183	1685
0150	0607 B	33684		2653	14761	0352	00240	1535
0175	0594 B	33816		2665	14761	0389	00302	1424
0200	0572 B	33857		2671	14757	0424	00370	1369
0225	0538 B	3387 B		2676	14748	0458	00444	1320
0250	0503	33882		2681	14738	0491	00523	1276
0300	0463	33932		2689	14730	0553	00699	1198
0400	0413	33997		2700	14726	0669	01114	1104

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0397	34084		2708	14737	0777	01611	1031
0600	0380	34168		2717	14748	0878	02177	0958
0700	0363	34242		2724	14758	0971	02800	0892
0800	0345	34303		2731	14768	1058	03472	0835
1000	0311	34389		2741	14788	1219	04946	0748
1200	0275	34456		2750	14807	1362	06565	0670
1500	0232	34516		2758	14840	1555	09221	0594
2000	0194	34601		2768	14909	1835	14219	0509

C-REF-NO 002 YR 1963 DEPTH WAVES 1 11X1 AIR T 10.5 VIS 97
 CONS. NO 026 MONTH 5 MXSAMPD 15 WAVES 2 25X2 WET B 08.3 STN 006
 LAT 49-20 N DAY 25 NO.DPTH 19 WND-DIR 110 WW-CODE 02
 LON 134-40 W HR 18.8 W-COLOR 30 WND-SPD 02 CLD-TPE 3
 MARSD SQ 158 W-TRNSP 13 BARO 1026. CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
188	0000	109 B	32495		2487	14904
188	0010	1035	32403		2489	14885
188	0020	0988 B	32402		2497	14869
188	0030	0886	32388		2512	14833
188	0050	0814 B	32431		2526	14809
188	0075	0751	32650		2552	14792
188	0100	0713 B	33259		2605	14789
188	0125	0673	33702		2646	14783
188	0150	0670 B	33847		2657	14788
188	0175	0644 B	33897		2665	14783
188	0200	0619 B	33926		2670	14777
188	0250	0561	33938		2678	14762
188	0300	0530	33959		2684	14758
188	0400	0474	34040		2697	14752
192	0500	0435	34112		2707	14754
192	0748	0378	34289		2727	14773
192	0994	0305	34388		2741	14785
192	1240	0267	34460		2751	14810
192	1489	0234	34524		2758	14839

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1090 B	32495		2487	14904	0000	00000	3094
0010	1035	32403		2489	14885	0031	00002	3074
0020	0988 B	32402		2497	14869	0062	00006	3001
0030	0886	32388		2512	14833	0091	00014	2859
0050	0814 B	32431		2526	14809	0147	00037	2726
0075	0751	32650		2552	14792	0213	00078	2481
0100	0713 B	33259		2605	14789	0269	00128	1980
0125	0673	33702		2646	14783	0314	00179	1601
0150	0670 B	33847		2657	14788	0353	00234	1493
0175	0644 B	33897		2665	14783	0390	00295	1426
0200	0619 B	33926		2670	14777	0425	00363	1376
0225	0589 B	3394 B		2675	14769	0459	00438	1335
0250	0561	33938		2678	14762	0492	00519	1302
0300	0530	33959		2684	14758	0557	00700	1255
0400	0474	34040		2697	14752	0678	01132	1140
0500	0435	34112		2707	14754	0788	01641	1052

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0410 B	3419 B		2715	14761	0891	02218	0976
0700	0387	34258		2723	14769	0986	02852	0908
0800	0362	34314		2730	14775	1075	03534	0845
1000	0304	34390		2742	14785	1235	05008	0739
1200	0272	34450		2749	14806	1378	06619	0672
1500	0233	34526		2759	14840	1569	09264	0587

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 06X1	AIR T 11.1	VIS 97
CONS. NO 027	MONTH 5	MXSAMPD 15		WAVES 2 24X2	WET B 09.4	STN 005
LAT 49-10 N	DAY 26	NO.DPTH 19		WND-DIR 990	WW-CODE 02	
LON 132-40 W	HR 01.8	W-COLOR		WND-SPD 01	CLD-TPE 8	
MARSD SQ 158		W-TRNSP		BARO 1026.	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
018	0000	126 B	32618		2465	14965
018	0010	1104	32471		2482	14911
018	0020	0966 B	32447		2504	14862
018	0030	0923 B	32460		2512	14848
018	0050	0844 B	32468		2525	14821
018	0075	0820	32501		2531	14817
018	0100	0692 B	32940		2583	14777
018	0125	0615	33274		2619	14754
018	0150	0619 B	33524		2639	14764
018	0175	0625 B	33783		2658	14773
018	0200	0602 B	33862		2667	14769
018	0250	0552	33897		2676	14758
018	0300	0499	33904		2683	14744
018	0400	0439 B	33971		2695	14737
022	0498	0418	34062		2704	14746
022	0748	0362	34256		2725	14766
022	0995	0313	34386		2741	14788
022	1243	0274	34467		2751	14814
022	1488	0238	34519		2758	14840

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1260 B	32618		2465	14965	0000	00000	3301
0010	1104	32471		2482	14911	0032	00002	3137
0020	0966 B	32447		2504	14862	0063	00006	2934
0030	0923 B	32460		2512	14848	0092	00014	2860
0050	0844 B	32468		2525	14821	0148	00037	2741
0075	0820	32501		2531	14817	0217	00080	2687
0100	0692 B	32940		2583	14777	0278	00135	2190
0125	0615	33274		2619	14754	0329	00193	1848
0150	0619 B	33524		2639	14763	0373	00255	1669
0175	0625 B	33783		2658	14773	0413	00321	1487
0200	0602 B	33862		2667	14769	0449	00391	1402
0225	0578 B	3389 C		2673	14764	0484	00466	1354
0250	0552	33897		2676	14758	0518	00549	1322
0300	0499	33904		2683	14744	0583	00732	1260
0400	0439 B	33971		2695	14737	0705	01167	1152
0500	0418	34064		2705	14746	0817	01683	1068

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0395	34148		2714	14754	0921	02268	0989
*0700	0373	34223		2722	14762	1017	02910	0917
0800	0351	34288		2729	14770	1106	03598	0853
1000	0312	34388		2741	14789	1268	05089	0750
1200	0280	34456		2749	14809	1413	06717	0677
1500	0236	34520		2758	14842	1606	09390	0596

C-REF-NO 002	YR 1963	DEPTH	WAVES 1 34X1	AIR T 10.8	VIS 97
CONS. NO 028	MONTH 5	MXSAMPD 15	WAVES 2 25X2	WET B 08.6	STN 004
LAT 49-02 N	DAY 26	NO.DPTH 19	WND-DIR 340	WW-CODE 02	
LON 130-40 W	HR 08.7	W-COLOR	WND-SPD 04	CLD-TPE X	
MARSD SQ 158		W-TRNSP	BARO 1024.	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
087	0000	111 B	32518		2485	14912
087	0010	1109	32396		2476	14912
087	0020	1072 B	32395		2482	14900
087	0030	0994	32420		2497	14874
087	0050	0859 B	32478		2523	14827
087	0075	0830	32505		2529	14821
087	0100	0713 B	32955		2581	14785
087	0125	0667	33425		2625	14777
087	0150	0665 B	33716		2648	14784
087	0175	0656 B	33833		2658	14786
087	0200	0628 B	33883		2666	14780
087	0250	0562	33913		2676	14762
087	0300	0514	33941		2684	14751
087	0400	0476	34022		2695	14753
092	0500	0450	34114		2705	14760
092	0750	0362	34274		2727	14767
092	1000	0318	34393		2741	14791
092	1250	0275	34465		2750	14816
092	1500	0240	34519		2758	14843

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1110 B	32518		2485	14912	0000	00000	3111
0010	1109	32396		2476	14912	0032	00002	3201
0020	1072 B	32395		2482	14900	0064	00007	3142
0030	0994	32420		2497	14874	0094	00014	2999
0050	0859 B	32478		2523	14827	0152	00038	2756
0075	0830	32505		2529	14821	0221	00082	2698
0100	0713 B	32955		2581	14785	0283	00136	2207
0125	0667	33425		2625	14777	0333	00194	1800
0150	0665 B	33716		2648	14784	0376	00254	1584
0175	0656 B	33833		2658	14786	0414	00318	1489
0200	0628 B	33883		2666	14780	0451	00388	1419
0225	0595 B	3390 B		2672	14771	0486	00465	1365
0250	0562	33913		2676	14762	0520	00547	1322
0300	0514	33941		2684	14751	0585	00730	1250
0400	0476	34022		2695	14753	0706	01164	1156
0500	0450	34114		2705	14760	0818	01680	1067

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0414 B	3419 B		2715	14762	0922	02263	0982
0700	0379	34248		2723	14765	1017	02899	0906
0800	0351	34301		2730	14771	1106	03580	0843
1000	0318	34393		2741	14791	1267	05065	0752
1200	0283	34453		2749	14811	1413	06703	0682
1500	0240	34519		2758	14843	1608	09397	0601

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 3323	AIR T 12.2	VIS 97
CONS. NO 029	MONTH 5	MXSAMPD	23	WAVES 2 3423	WET B 09.9	STN 003
LAT 48-52 N	DAY 26	NO.DPTH	21	WND-DIR 330	WW-CODE 02	
LON 128-40 W	HR 15.8	W-COLOR		WND-SPD 07	CLD-TPE 8	
MARSD SQ 157		W-TRNSP	11	BARO 1020.	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
158	0000	112 B	32256		2463	14912
158	0009	1101	32169		2459	14906
158	0019	1096 B	32172		2460	14906
158	0029	1093	32195		2463	14906
158	0048	0950 B	32396		2502	14860
158	0073	0886	32401		2513	14840
158	0097	0828 B	32558		2534	14824
158	0121	0749	33332		2606	14808
158	0145	0743 B	33662		2633	14814
158	0169	0720 B	33841		2650	14811
158	0193	0688 B	33898		2659	14803
158	0240	0630	33938		2670	14788
158	0288	0578	33961		2678	14775
158	0380	0512	34016		2690	14764
165	0480	0470	34105		2702	14765
165	0731	0390	34273		2724	14775
165	0972	0338	34390		2738	14795
165	1211	0297	34467		2748	14819
165	1452	0247	34539		2759	14839
165	1932	0195	34593		2767	14898
165	2324	0181 B	34625		2771	14959

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1120 B	32256		2463	14912	0000	00000	3321
0010	1100	32166		2459	14905	0034	00002	3356
0020	1097 B	32173		2460	14906	0067	00007	3348
0030	1087	3221 B		2465	14904	0101	00015	3309
0050	0942 B	3240 C		2504	14857	0164	00041	2938
0075	0882	3240 C		2513	14839	0236	00087	2851
0100	0817 B	3265 I		2543	14821	0305	00148	2575
0125	0746	3341 D		2612	14808	0361	00212	1918
0150	0739 B	33711		2637	14814	0407	00276	1687
0175	0712 B	3386 B		2653	14809	0447	00343	1542
0200	0679 B	33908		2661	14801	0485	00416	1467
0225	0648	3393 B		2667	14793	0521	00495	1412
0250	0618	33943		2672	14785	0556	00581	1369
0300	0567	33967		2680	14773	0624	00770	1294

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0400	0502	34033		2693	14764	0748	01215	1178
0500	0462	34121		2704	14765	0862	01738	1077
0600	0428	34193		2714	14768	0967	02327	0993
*0700	0398	34256		2722	14773	1063	02972	0921
0800	0373	34311		2729	14780	1153	03665	0861
1000	0333	34400		2740	14798	1318	05177	0764
1200	0299	34464		2748	14817	1465	06840	0692
1500	0240	34547		2760	14843	1659	09502	0579
2000	0187	3461 D		2769	14906	1931	14356	0492

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 33X3	AIR T 12.4	VIS 97
CONS. NO 030	MONTH 5	MXSAMPD 24	WAVES 2 33X4	WET B 10.2	STN 002	
LAT 48-46 N	DAY 26	NO.DPTH 21	WND-DIR 330	WW-CODE 02		
LON 127-40 W	HR 20.4	W-COLOR	WND-SPD 08	CLD-TPE 6		
MARSD SQ 157		W-TRNSP 09	BARO 1020.	CLD-AMT 6	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
204	0000	116 B	32347		2463	14927
204	0010	1104	32261		2466	14908
204	0020	1097 B	32271		2468	14907
204	0030	1095	32282		2469	14908
204	0050	0898 B	32391		2510	14841
204	0075	0829	32633		2540	14822
204	0100	0784 B	33190		2590	14816
204	0125	0752	33574		2625	14813
204	0150	0735 B	33806		2645	14813
204	0175	0716 B	33877		2653	14811
204	0200	0694 B	33915		2659	14807
204	0250	0631	33945		2670	14790
204	0300	0576	33991		2681	14777
204	0400	0531 B	34047		2691	14776
211	0500	0486	34121		2702	14775
211	0750	0394	34283		2724	14780
211	1000	0346 B	34386		2737	14803
211	1250	0303	34471		2748	14828
211	1500	0246 B	34533		2758	14846
211	2000	0189	34612		2769	14907
211	2400	0179	34640		2772	14972

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1160 B	32347		2463	14927	0000	00000	3322
0010	1104	32261		2466	14908	0033	00002	3292
0020	1097 B	32271		2468	14907	0066	00007	3275
0030	1095	32282		2469	14908	0099	00015	3266
0050	0898 B	32391		2510	14841	0161	00040	2877
0075	0829	32633		2540	14822	0230	00084	2601
0100	0784 B	33190		2590	14816	0289	00136	2128
0125	0752	33574		2625	14813	0339	00193	1802
0150	0735 B	33806		2645	14813	0382	00253	1610
0175	0716 B	33877		2653	14811	0421	00319	1535
0200	0694 B	33915		2659	14807	0459	00392	1481
0225	0664 B	3393 B		2665	14799	0496	00472	1431
0250	0631	33945		2670	14790	0532	00559	1384
0300	0576	33991		2681	14777	0599	00748	1287

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0400	0531 B	34047		2691	14776	0724	01197	1202
0500	0486	34121		2702	14775	0841	01733	1104
0600	0445	34191		2712	14775	0948	02335	1014
0700	0409	34254		2721	14778	1046	02991	0935
0800	0382	34307		2727	14784	1138	03695	0874
1000	0346 B	34386		2737	14803	1306	05245	0789
1200	0312	34456		2746	14823	1458	06960	0713
1500	0246 B	34533		2758	14846	1658	09704	0597
2000	0189	34612		2769	14907	1935	14642	0494

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 30X3	AIR T 12.2	VIS 97
CONS. NO 031	MONTH 5	MXSAMPD 10		WAVES 2 33X4	WET B 09.9	STN 001
LAT 48-42 N	DAY 27	NO.DPTH 17		WND-DIR 300	WW-CODE 02	
LON 126-40 W	HR 01.1	W-COLOR		WND-SPD 07	CLD-TPE 8	
MARSD SQ 157		W-TRNSP		BARO 1021.	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
011	0000	121 B	31803		2411	14938
011	0010	1133 B	31968		2438	14915
011	0020	1125 B	31991		2441	14914
011	0030	1034	31955		2454	14882
011	0050	0974 B	32201		2483	14867
011	0074	0892	32404		2512	14843
011	0099	0813 B	33127		2581	14826
011	0124	0763	33608		2626	14817
011	0149	0749 B	33773		2641	14818
011	0174	0727 B				
011	0199	0704 B	33950		2661	14811
011	0248	0641	33959		2670	14794
011	0297	0578	34041		2684	14778
011	0395	0540	34123		2696	14780
011	0496	0494	34157		2704	14778
011	0748	0410	34306		2725	14787
011	0994	0348 B	34460		2743	14804

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1210 B	31803		2411	14938	0000	00000	3811
0010	1133 B	31968		2438	14915	0037	00002	3558
0020	1125 B	31991		2441	14914	0073	00007	3529
0030	1034	31955		2454	14882	0108	00016	3407
0050	0974 B	32201		2483	14867	0173	00043	3134
0075	0888	3243 C		2515	14842	0248	00090	2838
0100	0810 B	33152		2583	14826	0312	00146	2194
0125	0762	33618		2627	14817	0362	00203	1783
0150	0748 B	33778		2641	14818	0405	00264	1649
0175	0726 B	33888		2653	14815	0445	00331	1541
0200	0703 B	33951		2661	14811	0483	00404	1467
0225	0672 B	3396 E		2666	14803	0519	00483	1422
0250	0638	33962		2671	14793	0555	00569	1380
0300	0576	34045		2685	14778	0621	00755	1247
0400	0538	34125		2696	14780	0742	01188	1152
0500	0492	34159		2704	14778	0855	01708	1084
0600	0455	3421 B		2712	14780	0961	02303	1010
*0700	0424	34274		2721	14784	1059	02959	0937

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0392 B	3433 D		2728	14788	1150	03662	0871
1000	0347 B	34465		2744	14804	1313	05150	0732

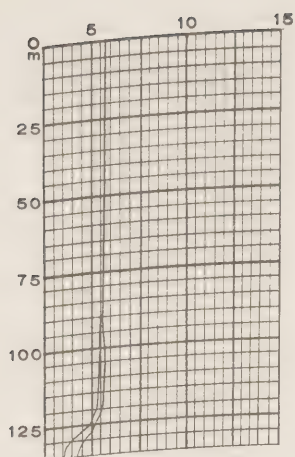
SECTION IV

Bathythermograph data

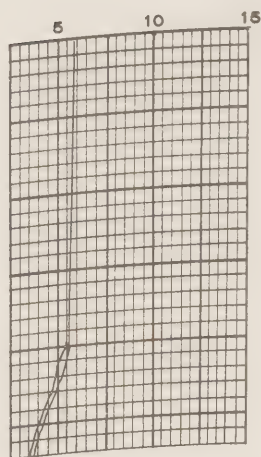
C.C.G.S. "St. Catharines"

Daily bathythermograms
and
Ocean series bathythermograms

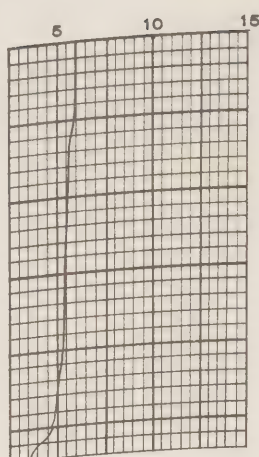
Survey P-63-2, C.C.G.S. "St. Catharines"



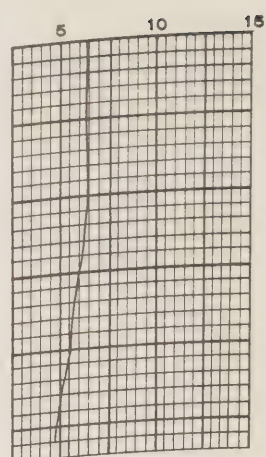
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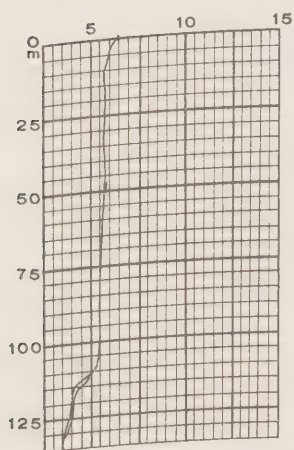
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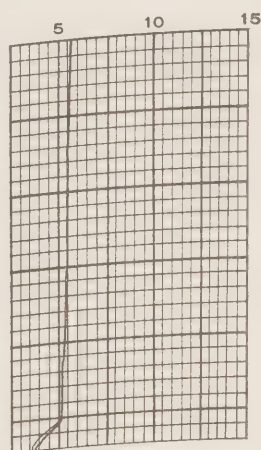
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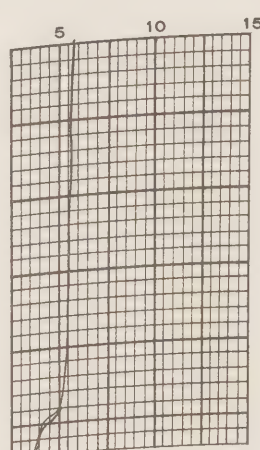
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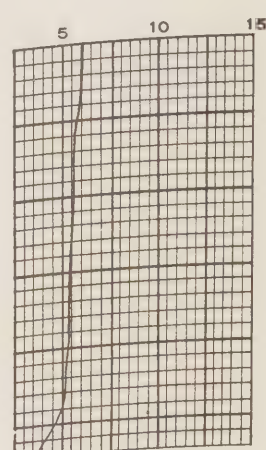
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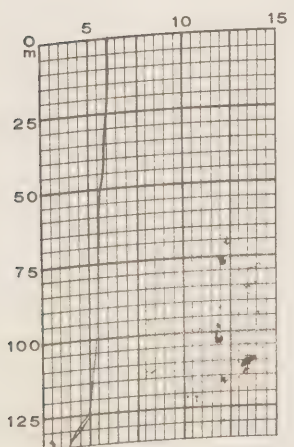
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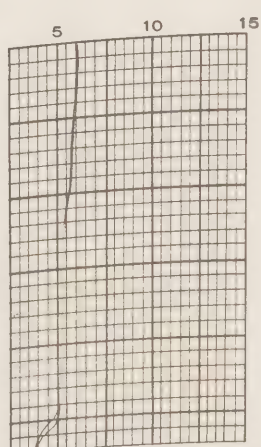
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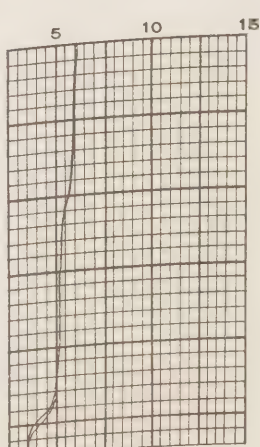
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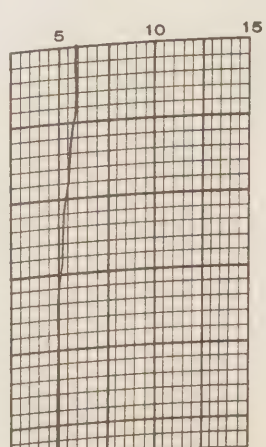
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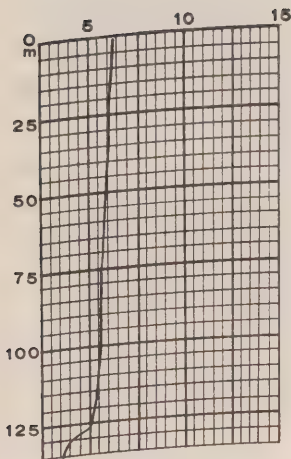


63/04/26/02.0
50°00'n
145°00'w

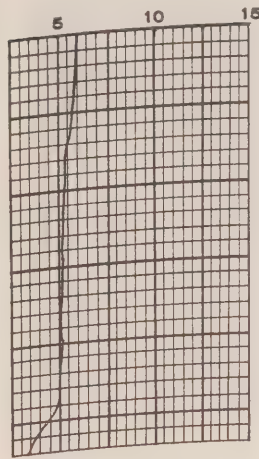


63/04/27/02.0
50°00'n
145°04'w

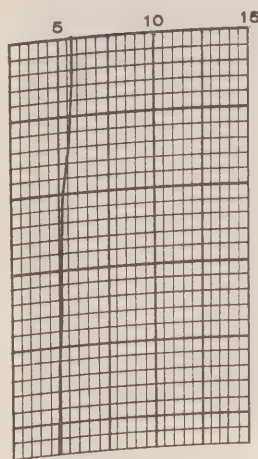
Survey P-63-2, C.C.G.S. "St. Catharines"



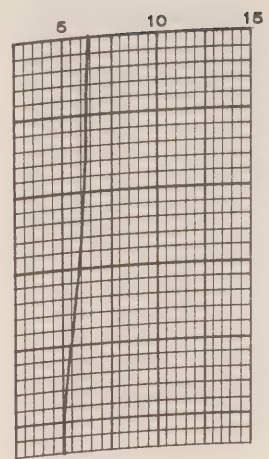
63/04/28/02.0
50°00'n
145°00'w



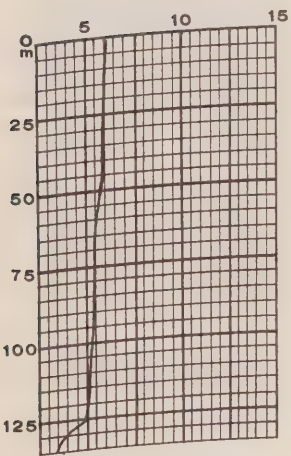
63/04/29/02.0
50°02'n
144°53'w



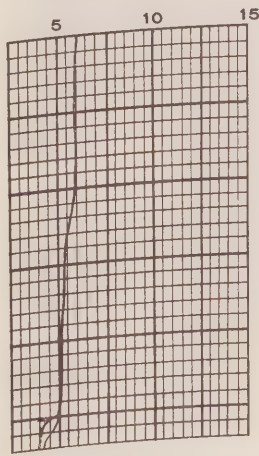
63/04/30/02.0
49°59'n
144°58'w



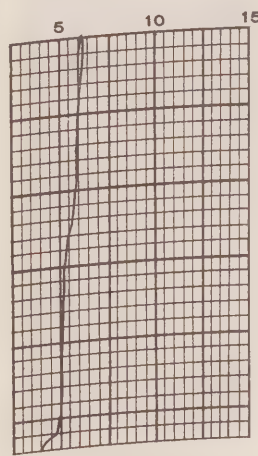
63/05/01/02.0
49°58'n
144°34'w



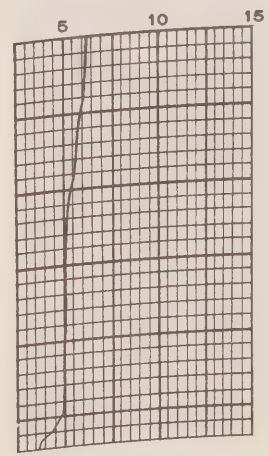
63/05/02/02.0
50°00'n
144°56'w



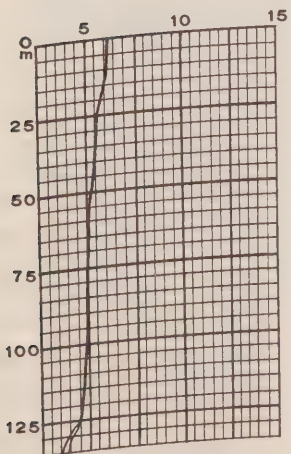
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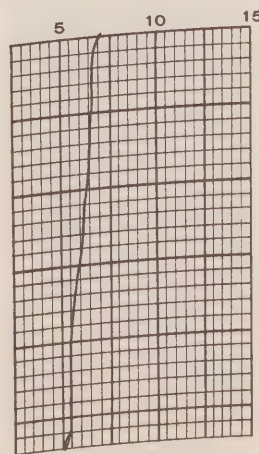
63/05/04/02.0
49°59'n
144°59'w



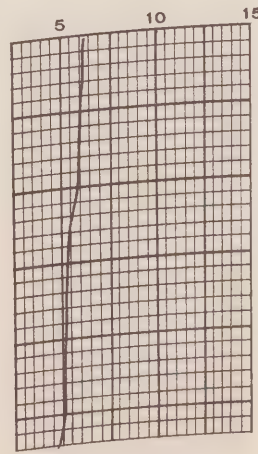
63/05/05/02.0
50°03'n
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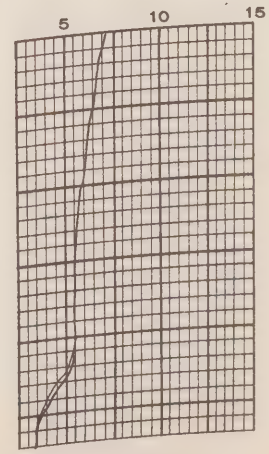
63/05/06/02.0
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145°03'w



63/05/07/02.0
49°50'n
145°00'w

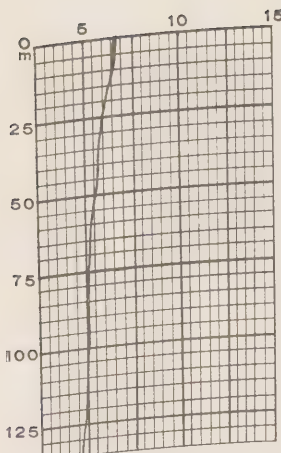


63/05/08/02.0
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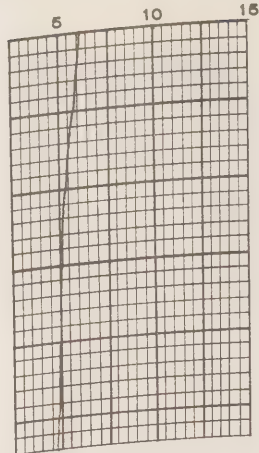


63/05/09/02.0
49°55'n
144°50'w

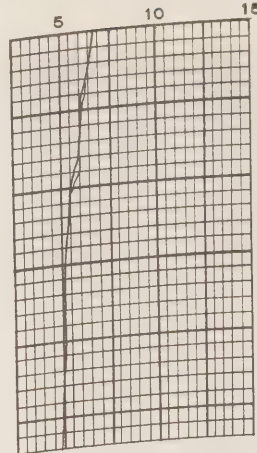
Survey P-63-2, C.C.G.S. "St. Catharines"



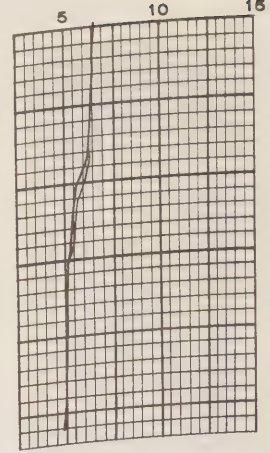
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144°58'w



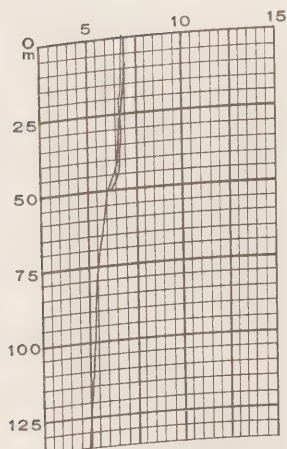
63/05/11/02.0
50°00'n
144°52'w



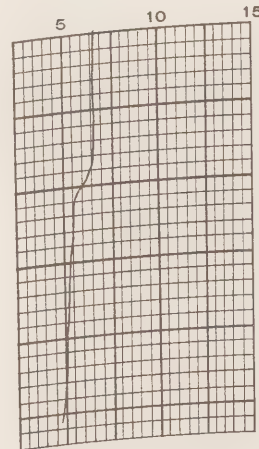
63/05/12/02.0
49°58'n
144°58'w



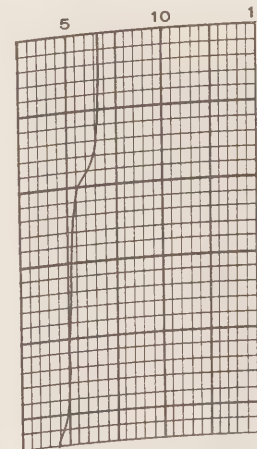
63/05/13/02.0
50°01'n
144°59'w



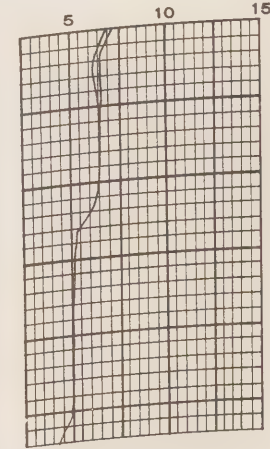
63/05/14/02.0
49°58'n
145°05'w



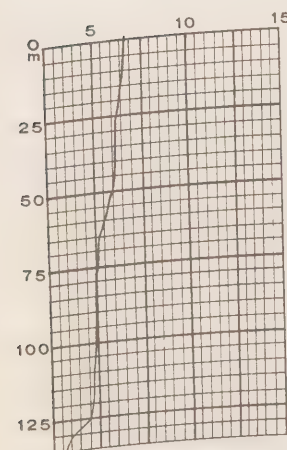
63/05/16/02.0
50°03'n
144°56'w



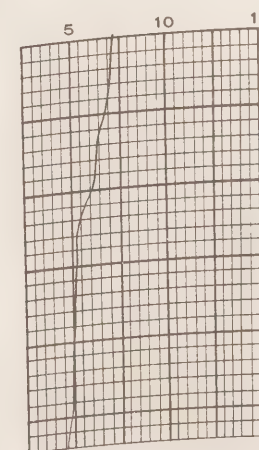
63/05/17/02.0
50°03'n
145°03'w



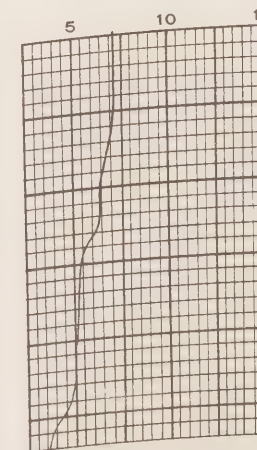
63/05/19/02.0
50°00'n
145°00'w



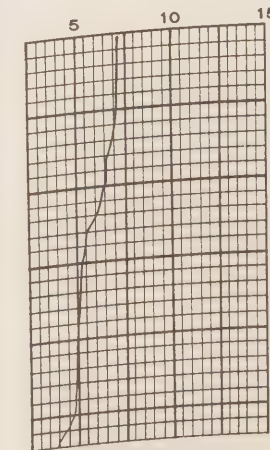
63/05/20/02.0
50°01'n
145°00'w



63/05/22/02.0
50°00'n
145°00'w

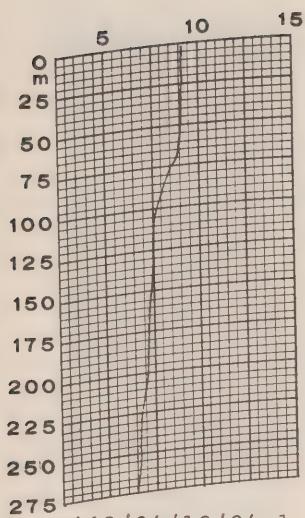


63/05/23/02.0
50°00'n
144°58'w

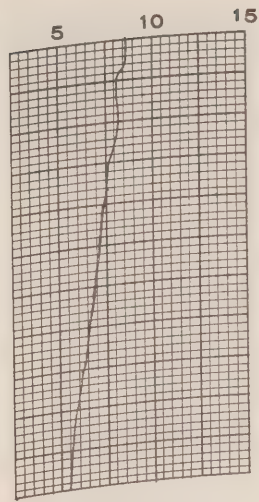


63/05/24/02.0
50°00'n
145°00'w

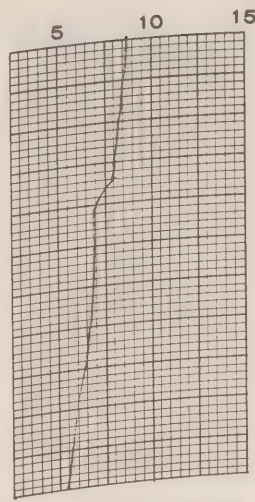
Survey P-63-2, C.C.G.S. "St. Catharines"



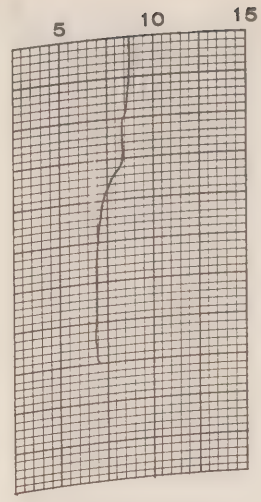
*63/04/10/04.1
48°42'n
126°40'w



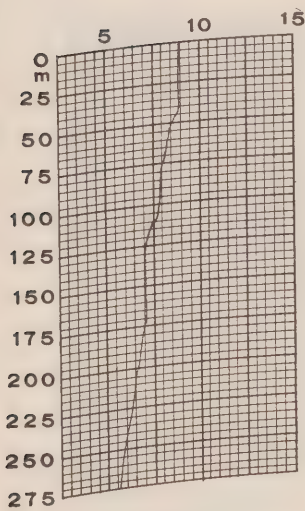
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48°47'n
127°40'w



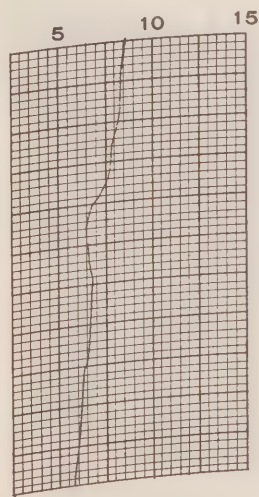
*63/04/10/12.8
48°51'n
128°40'w



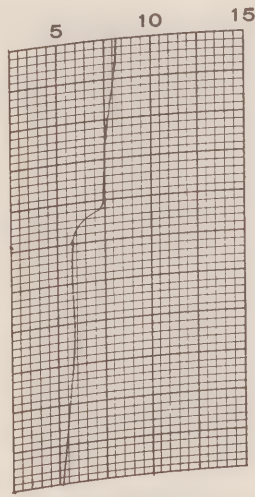
63/04/10/16.7
48°56'n
129°40'w



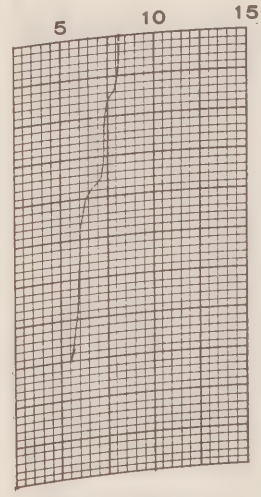
*63/04/10/20.5
49°01'n
130°40'w



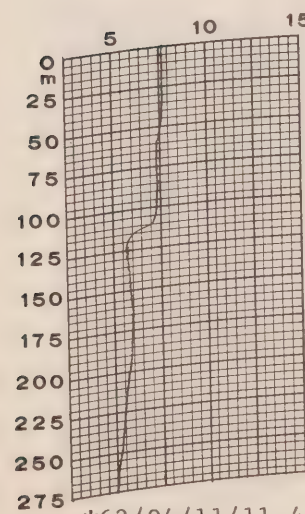
63/04/11/00.0
49°05'n
131°40'w



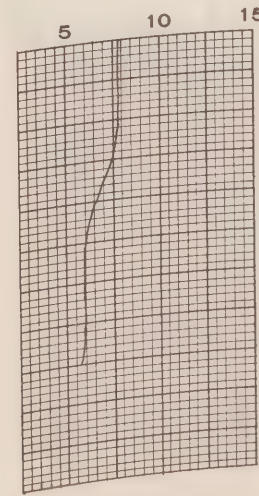
*63/04/11/04.0
49°10'n
132°40'w



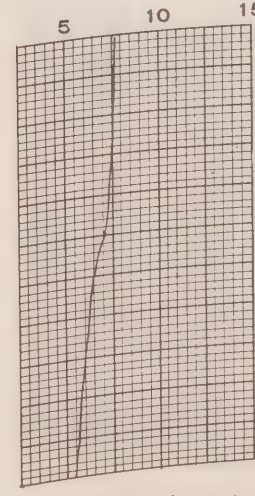
63/04/11/07.3
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133°40'w



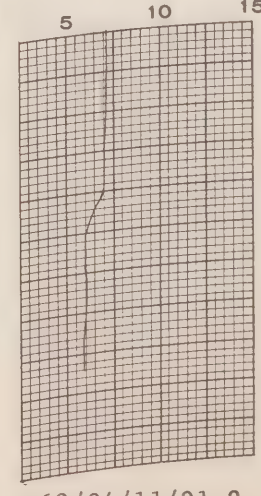
*63/04/11/11.4
49°19'n
134°40'w



63/04/11/15.0
49°23'n
135°40'w

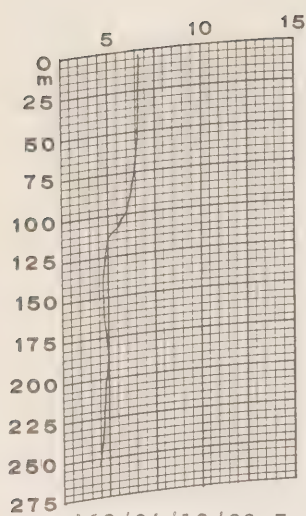


*63/04/11/18.6
49°26'n
136°40'w

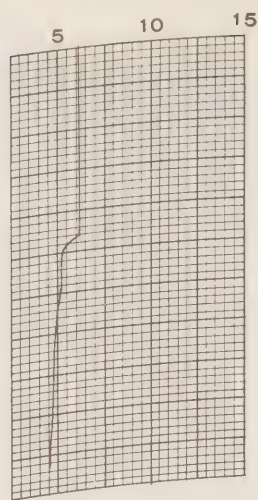


63/04/11/21.2
49°30'n
137°40'w

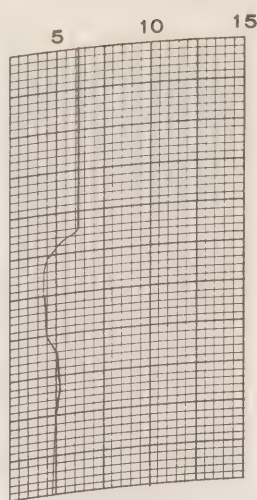
Survey P-63-2, C.C.G.S. "St Catharines"



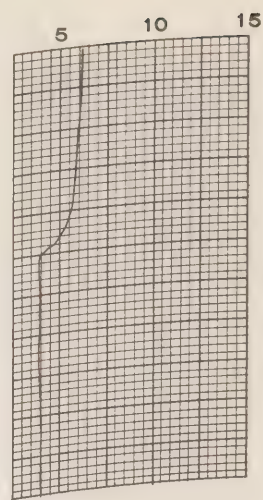
*63/04/12/09.7
49°41'N
140°40'W



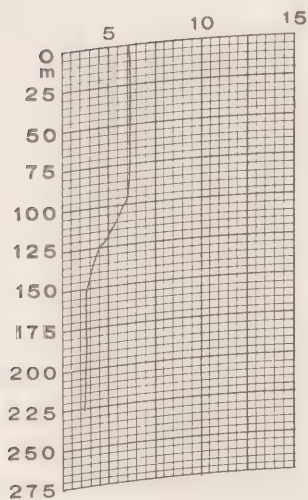
*63/04/12/20.5
49°49'N
142°40'W



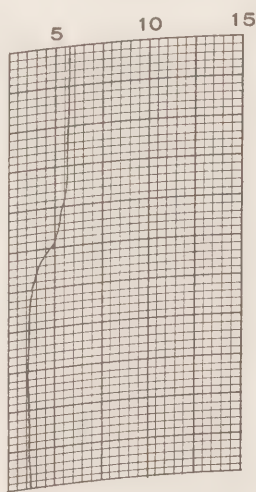
63/04/13/01.6
49°53'N
143°40'W



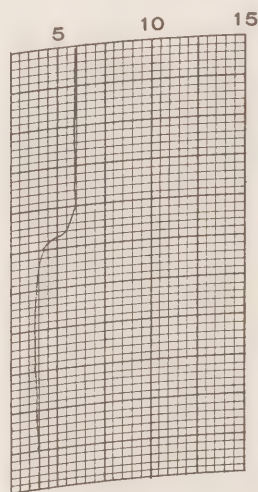
63/04/13/17.0
49°58'N
145°00'W



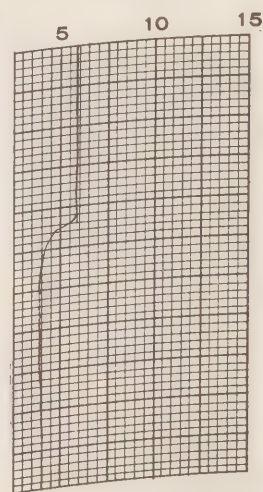
63/04/15/17.0
50°00'N
145°00'W



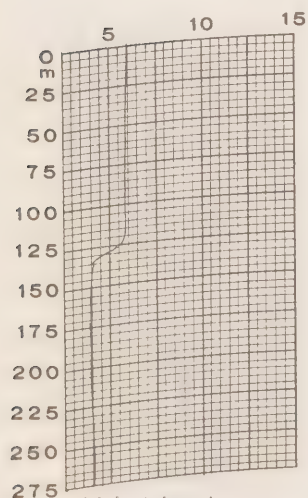
*63/04/15/20.1
50°02'N
145°02'W



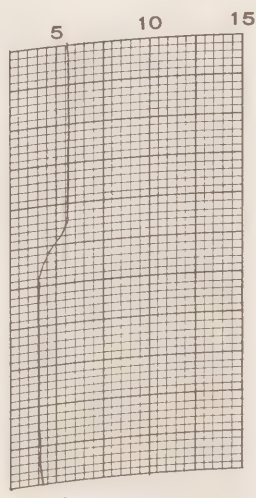
63/04/16/17.0
50°00'N
145°00'W



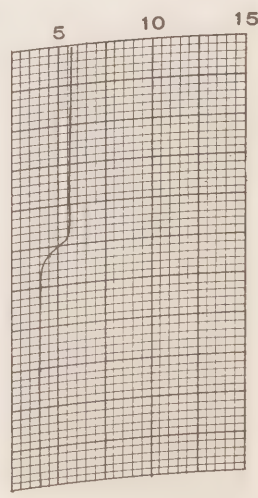
*63/04/16/19.2
49°57'N
144°52'W



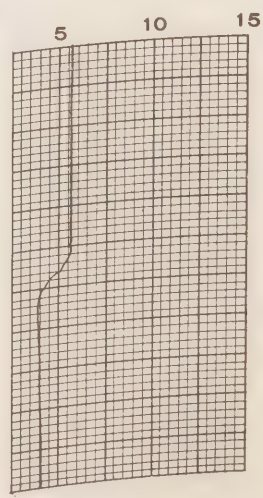
63/04/17/17.0
50°00'N
145°00'W



63/04/18/17.0
50°00'N
145°02'W

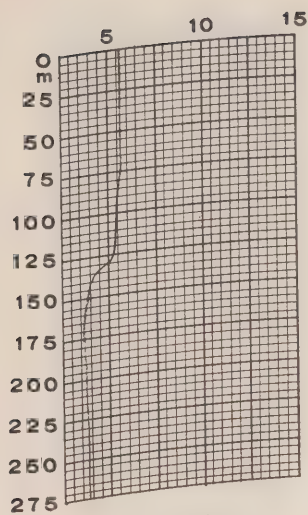


63/04/19/17.0
49°59'N
145°00'W

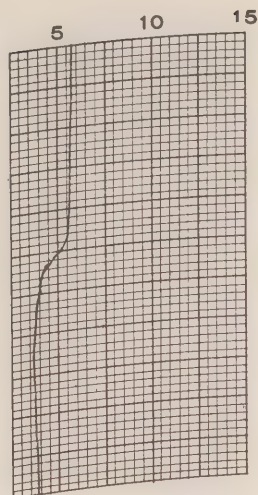


*63/04/19/19.7
50°00'N
145°02'W

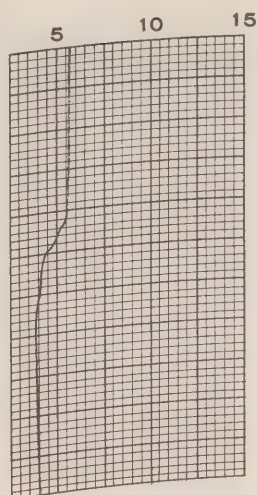
Survey P-63-2, C.C.G.S. "St. Catharines"



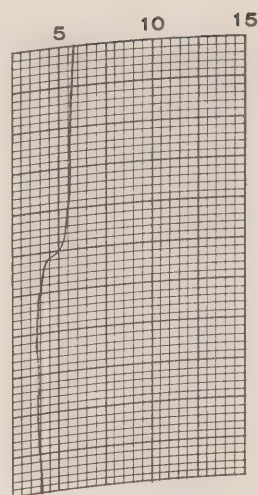
63/04/20/17.0
50°03'n
145°02'w



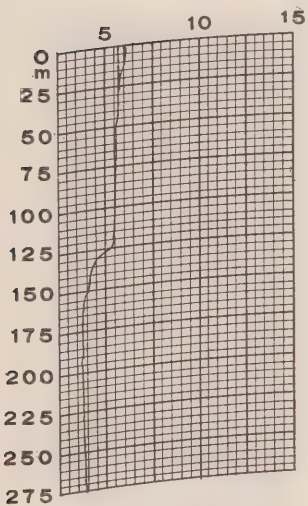
63/04/21/17.0
49°57'n
145°00'w



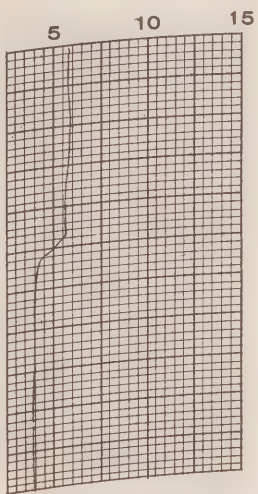
63/04/22/17.0
49°57'n
144°57'w



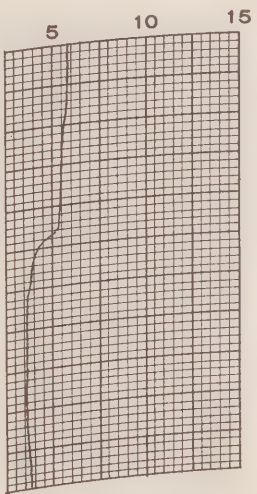
63/04/23/17.0
50°02'n
144°59'w



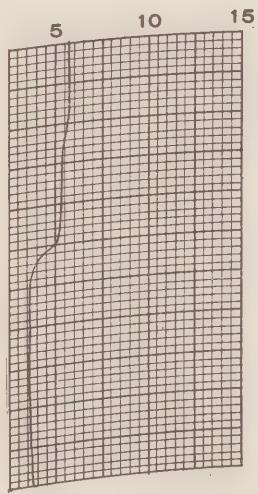
*63/04/23/19.3
50°01'n
144°54'w



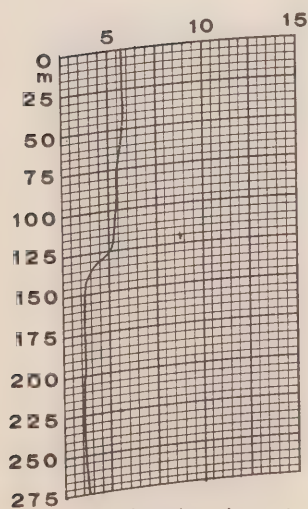
63/04/24/17.0
50°01'n
145°01'w



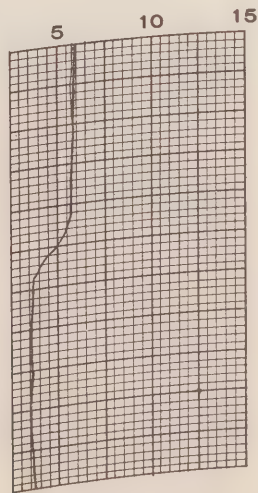
63/04/25/17.0
50°02'n
145°58'w



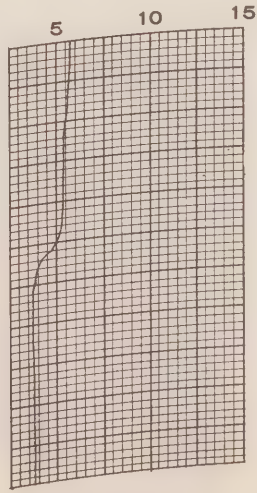
63/04/26/17.0
49°59'n
144°59'w



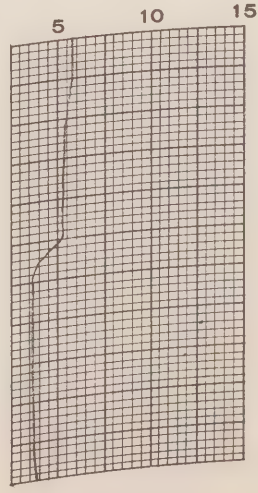
*63/04/26/19.3
49°57'n
144°55'w



63/04/27/17.0
49°58'n
145°00'w

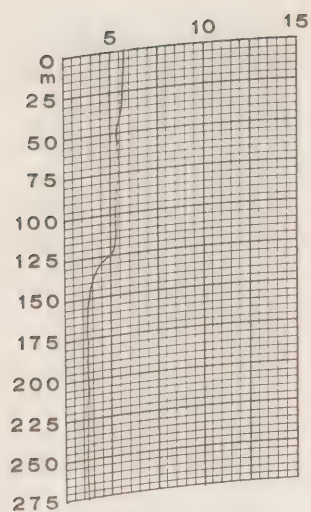


63/04/28/17.0
50°00'n
145°00'w

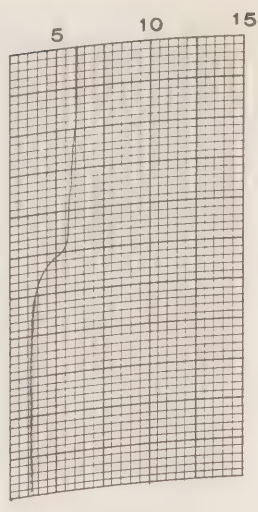


63/04/29/17.0
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145°00'w

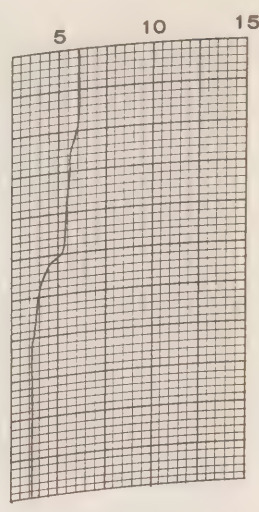
Survey P-63-2, C.C.G.S. "St. Catharines"



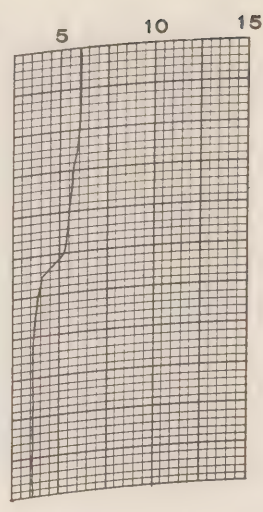
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50°02'n
144°54'w



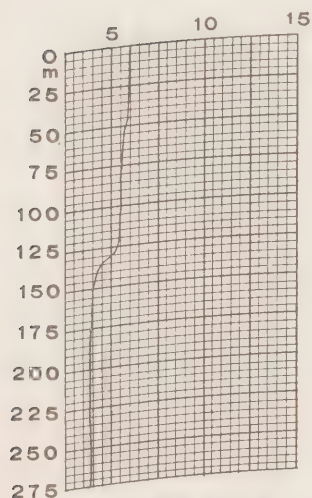
63/04/30/17.0
49°57'n
144°58'w



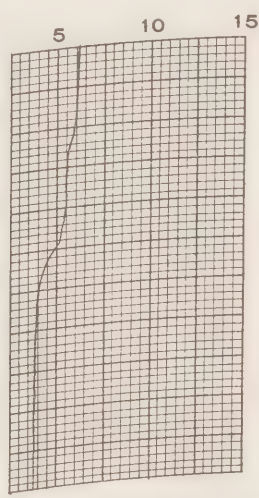
63/05/01/17.0
50°00'n
144°59'w



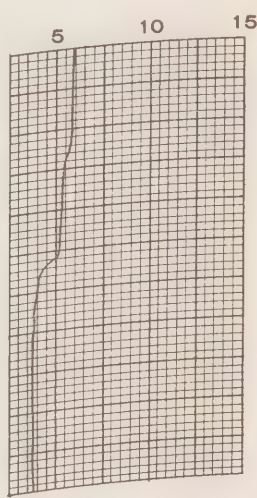
63/05/02/17.0
49°58'n
144°50'w



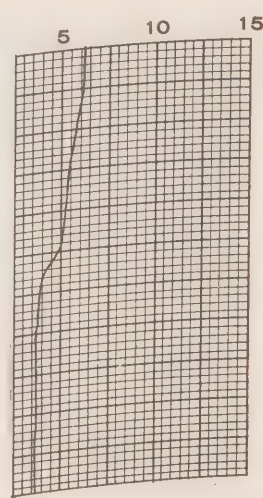
63/05/03/17.0
50°00'n
144°58'w



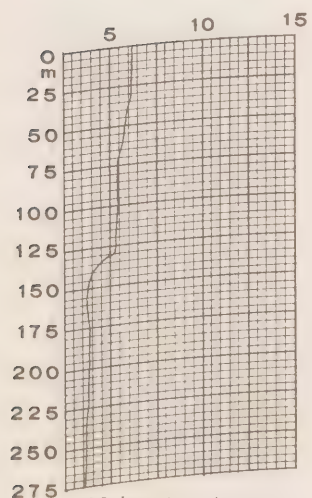
*63/05/03/19.5
49°59'n
144°59'w



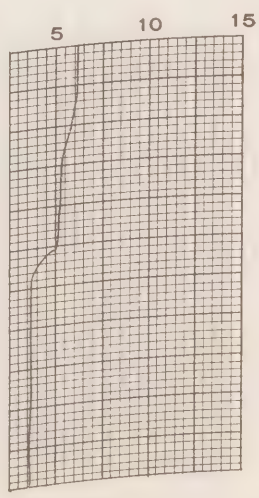
63/05/04/17.0
49°57'n
145°03'w



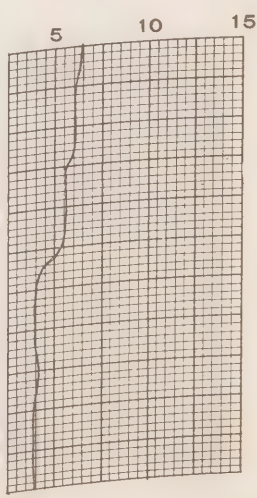
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145°00'w



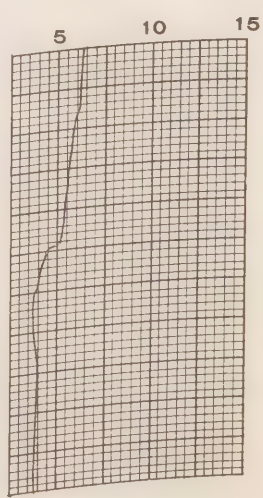
63/05/06/17.0
50°00'n
145°00'w



63/05/07/17.0
50°01'n
144°55'w

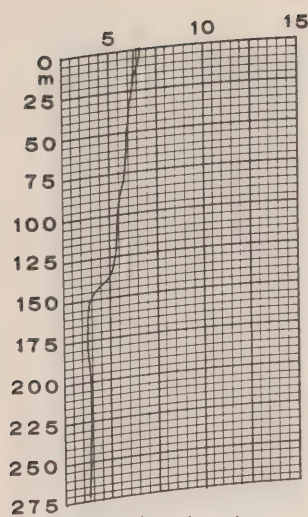


*63/05/07/19.4
49°57'n
144°50'w

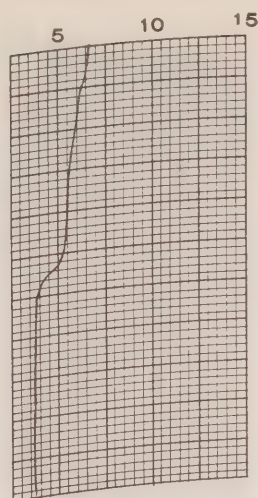


63/05/08/17.0
50°00'n
145°00'w

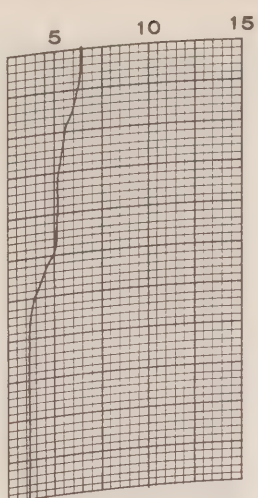
Survey P-63-2, C.C.G.S. "St. Catharines"



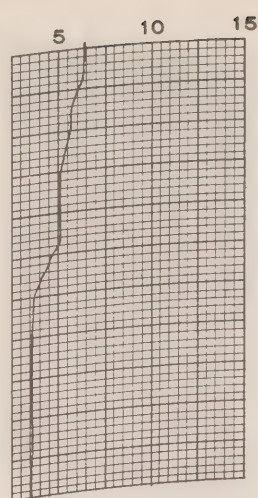
*63/05/08/19.3
49°56'n
144°53'w



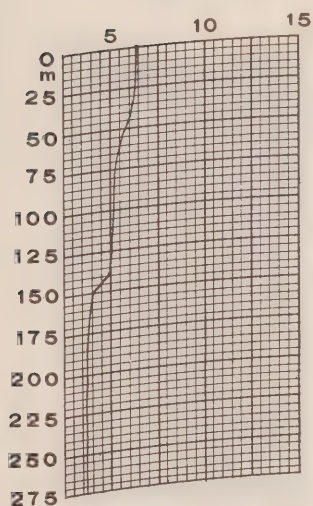
63/05/09/17.0
49°56'n
145°00'w



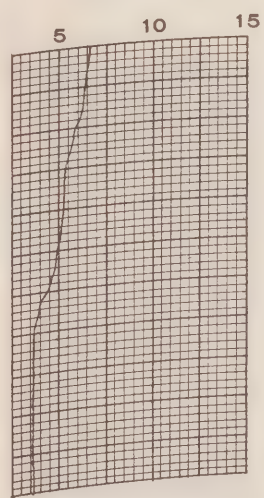
63/05/10/17.0
50°01'n
144°58'w



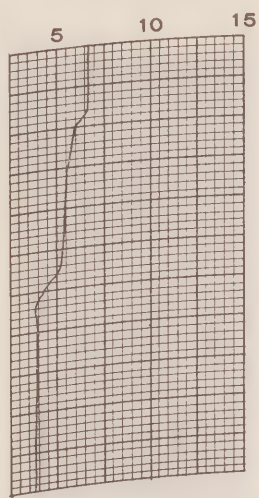
63/05/10/19.2
50°00'n
144°54'w



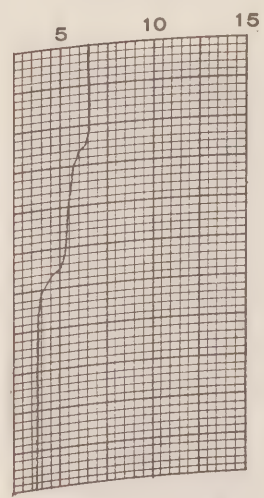
63/05/11/17.0
50°01'n
145°00'w



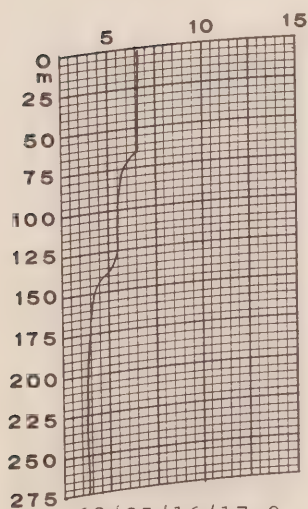
63/05/12/17.0
49°59'n
145°01'w



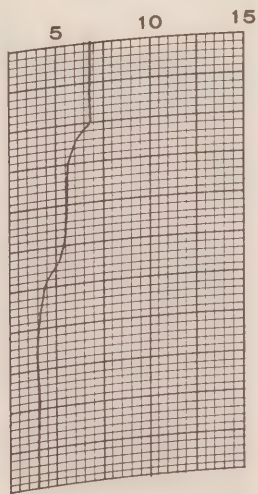
63/05/13/17.0
50°00'n
144°59'w



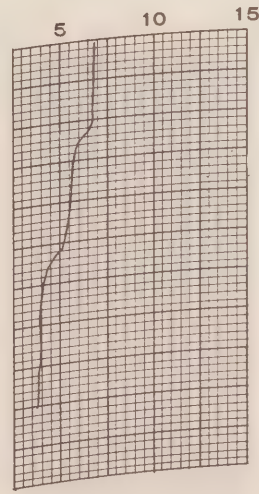
63/05/15/17.0
50°00'n
145°00'w



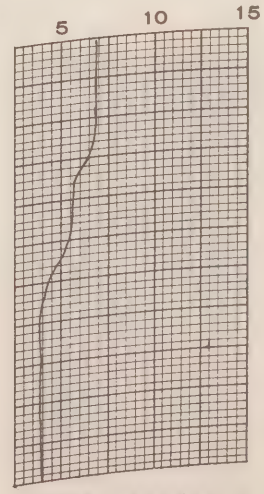
63/05/16/17.0
50°01'n
144°57'w



63/05/17/17.0
50°02'n
145°02'w

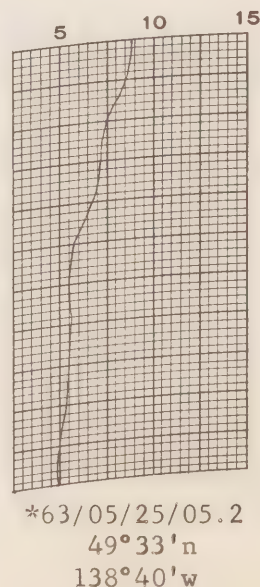
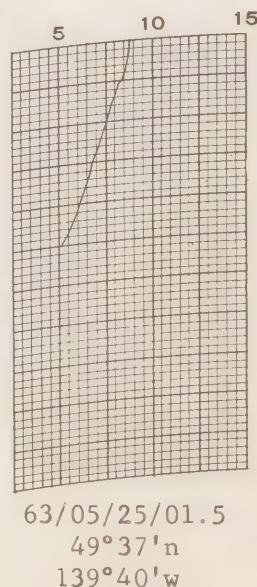
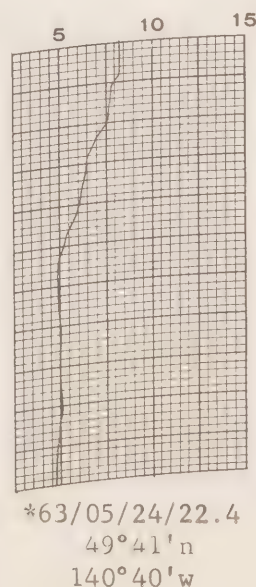
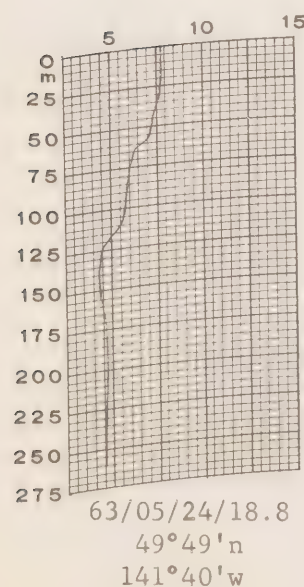
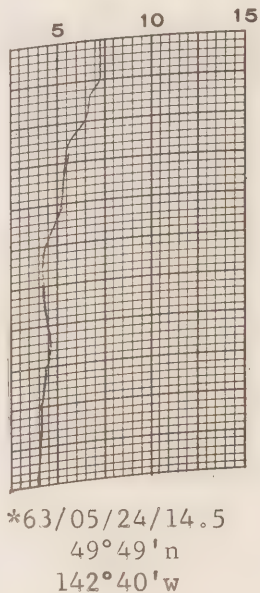
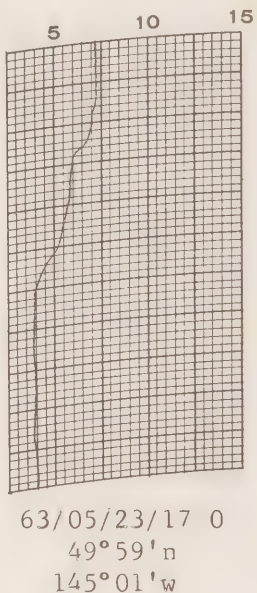
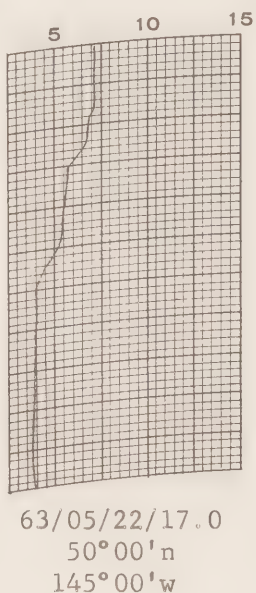
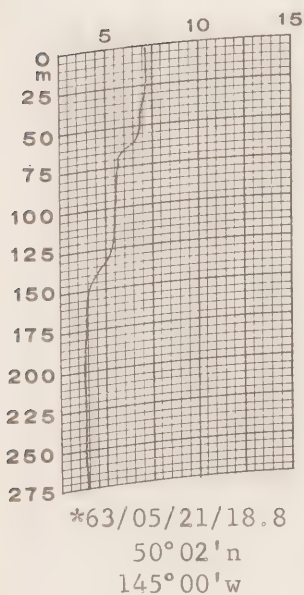
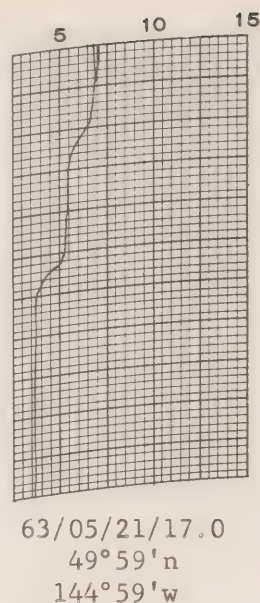
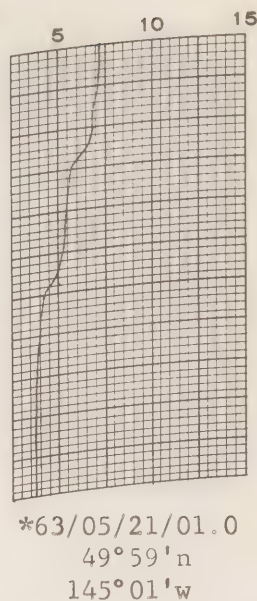
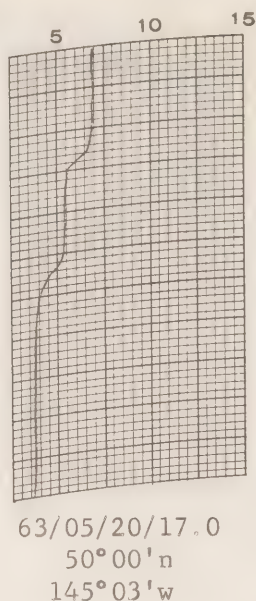
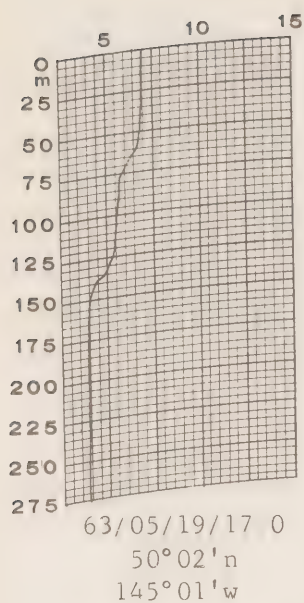


63/05/18/17.0
50°00'n
145°00'w

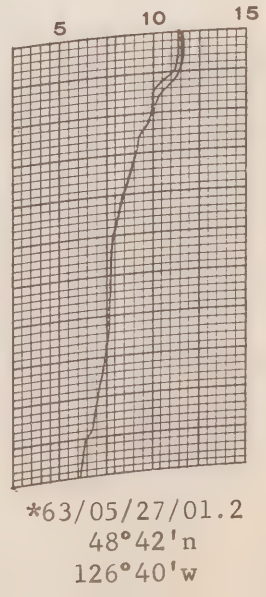
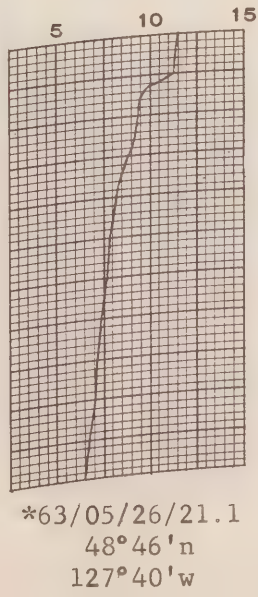
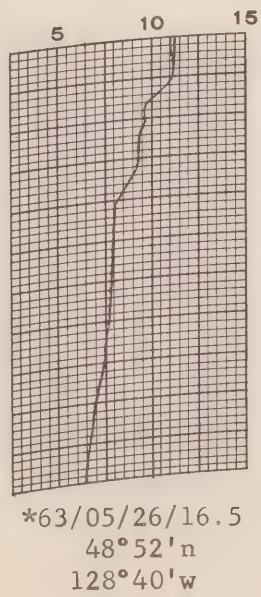
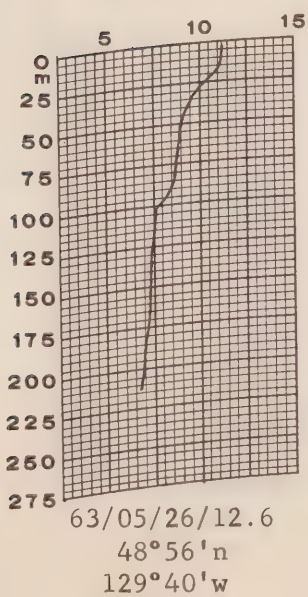
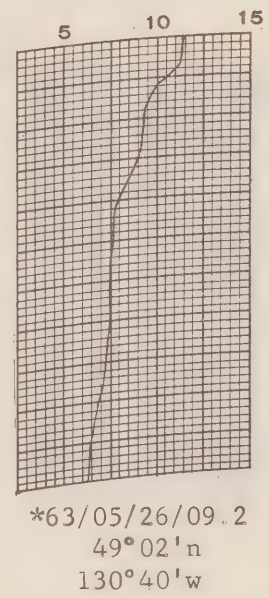
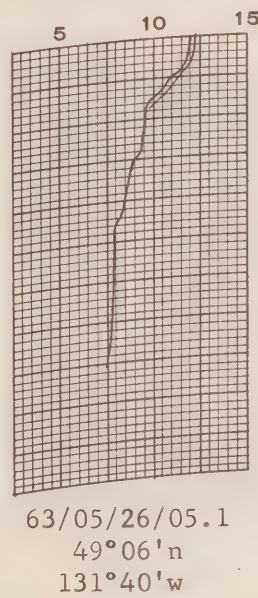
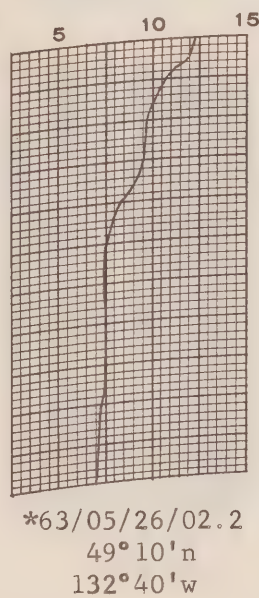
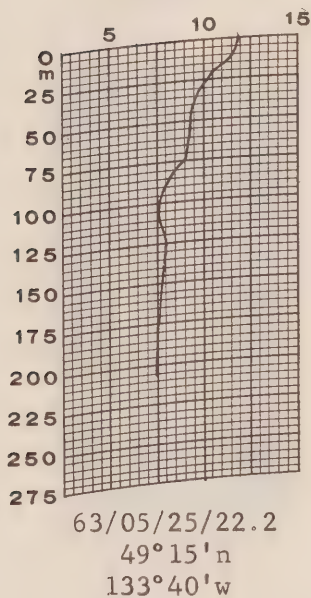
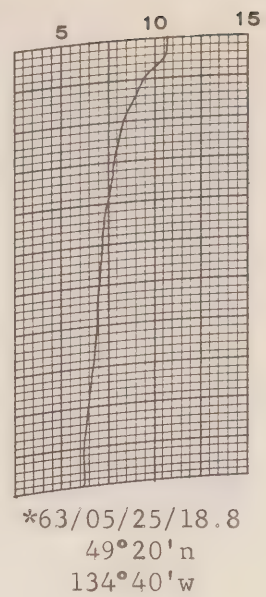
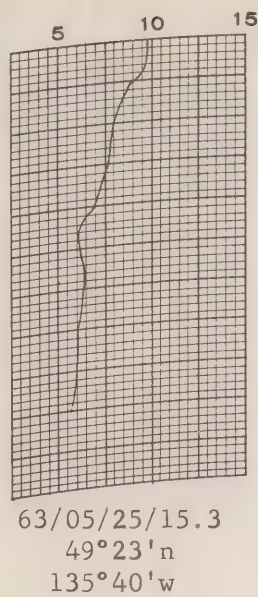
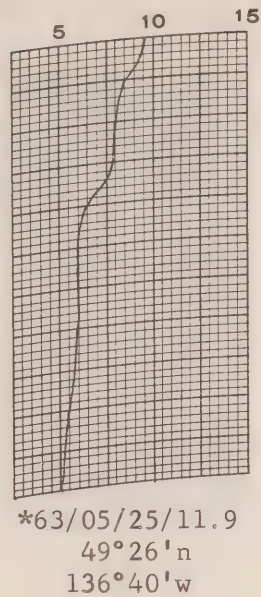
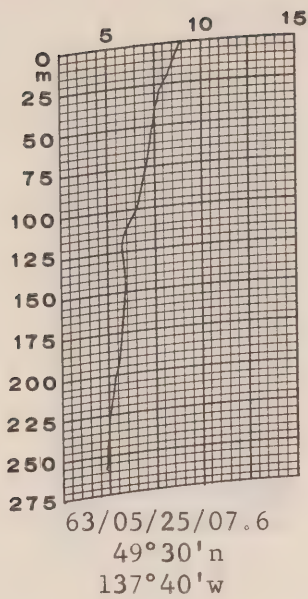


*63/05/18/18.9
50°00'n
144°58'w

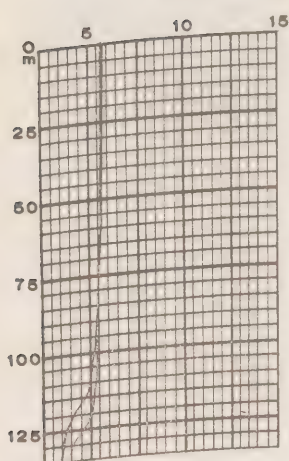
Survey P-63-2, C.C.G.S. "St. Catharines"



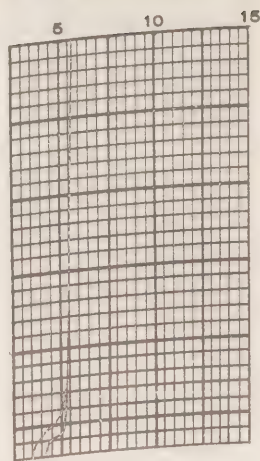
Survey P-63-2, C.C.G.S. "St. Catharines"



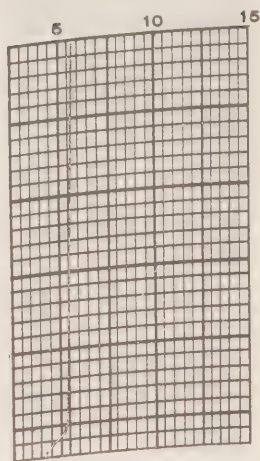
Survey P-63-2, C C G S "St Catharines, OCEAN Series



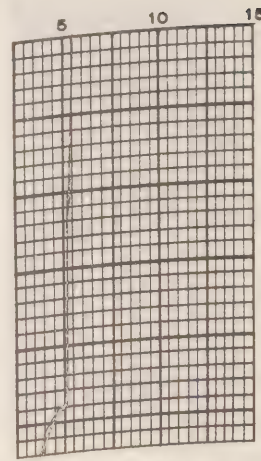
63/04/15/18.8
50.0°N
145.0°W



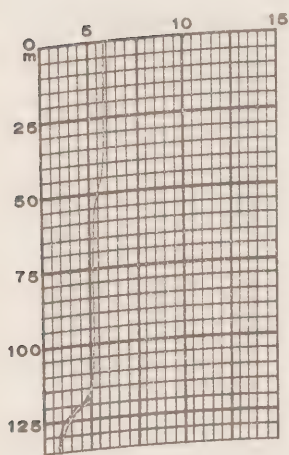
63/04/17/18.8
50.0°N
145.0°W



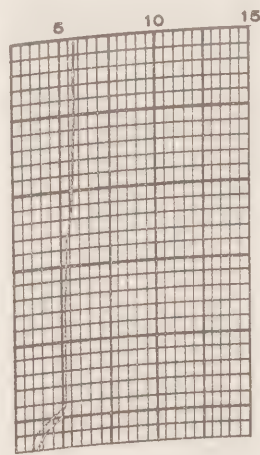
63/04/19/19.2
50.0°N
145.0°W



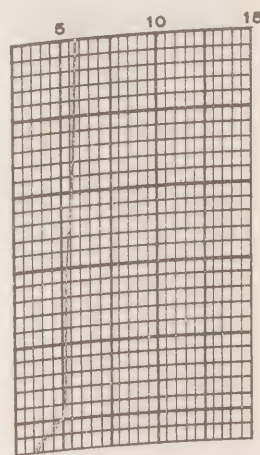
63/04/22/19.0
49.9°N
144.9°W



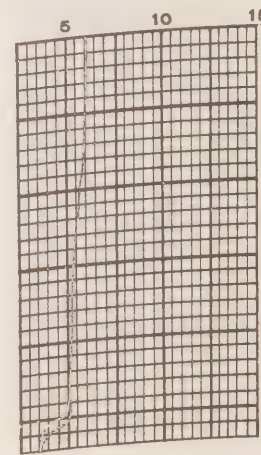
63/04/24/18.8
50.0°N
145.0°W



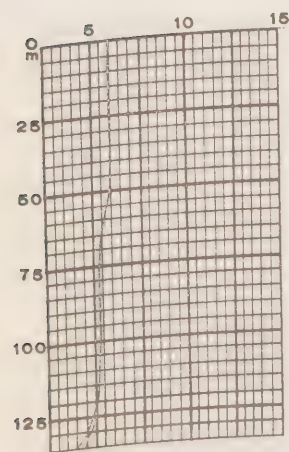
63/04/26/18.7
49.9°N
144.8°W



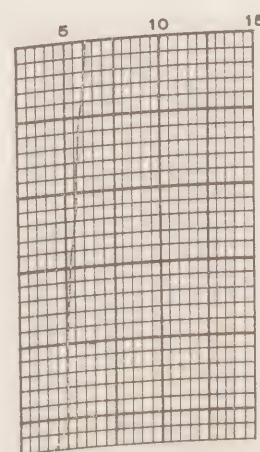
63/04/29/18.8
50.0°N
144.9°W



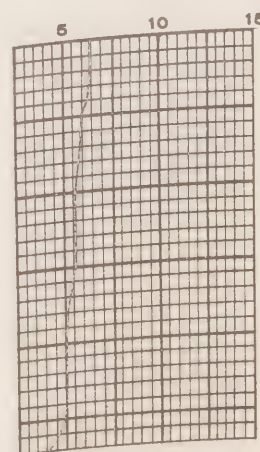
63/05/01/18.8
49.9°N
144.9°W



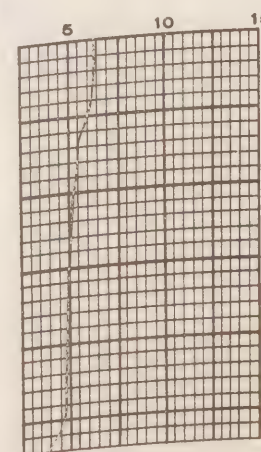
63/05/03/18.5
50.0°N
145.0°W



63/05/06/18.3
49.9°N
145.0°W

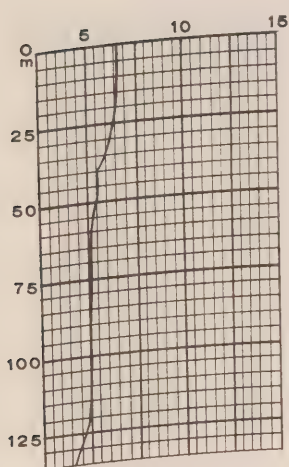


63/05/08/18.5
49.9°N
144.9°W

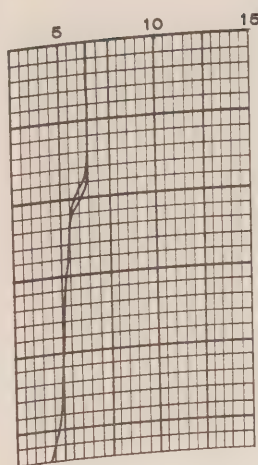


63/05/10/19.0
50.0°N
144.9°W

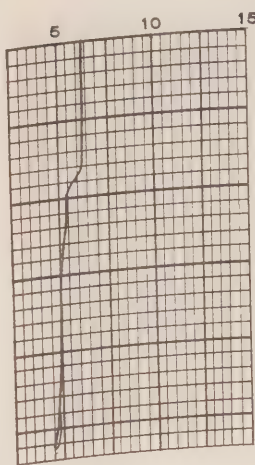
Survey P-63-2, C.C.G.S. "St. Catharines", OCEAN Series



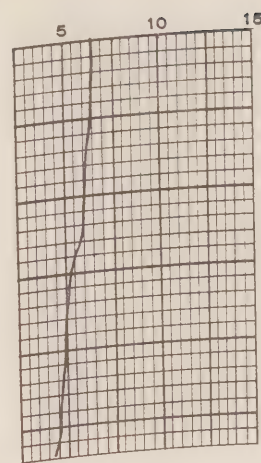
63/05/13/18.5
50.0°n
144.9°w



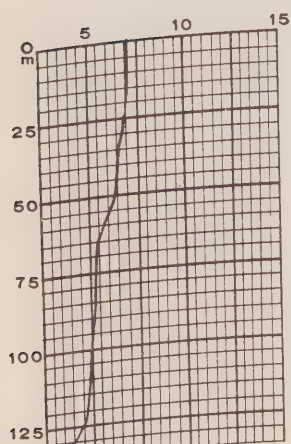
63/05/15/18.5
50.0°n
144.9°w



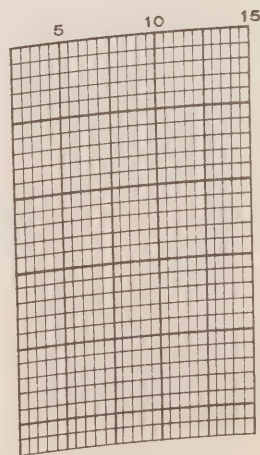
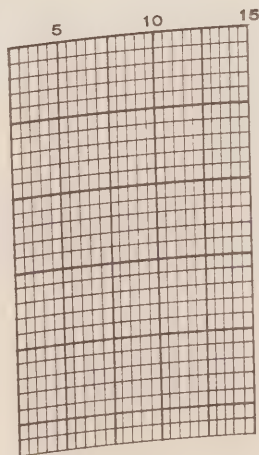
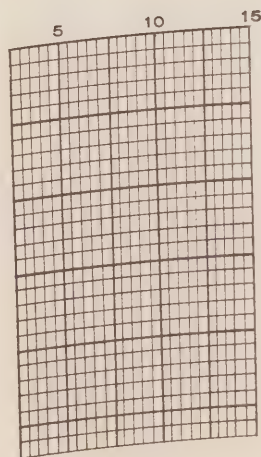
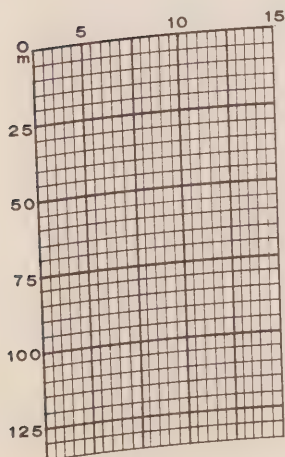
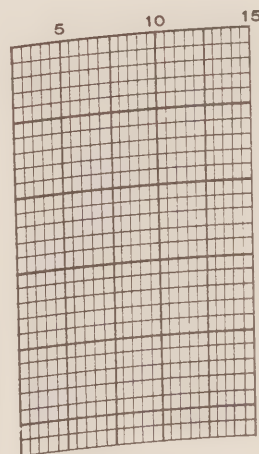
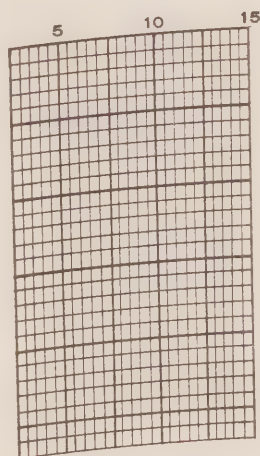
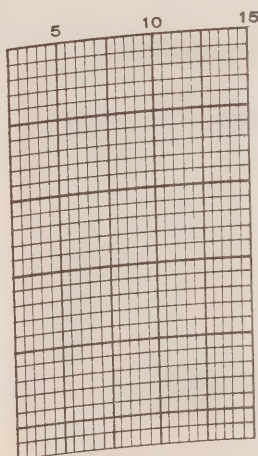
63/05/17/19.0
50.1°n
145.1°w



63/05/20/19.2
50.0°n
145.2°w



63/05/22/18.3
50.0°n
144.9°w

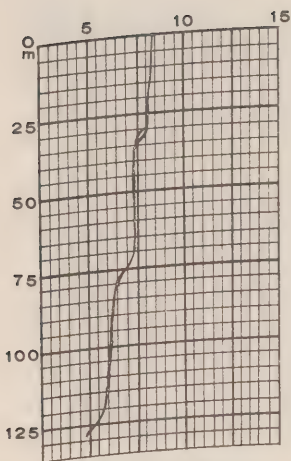


C. C. G. S. "Stonetown" Patrol No. 56

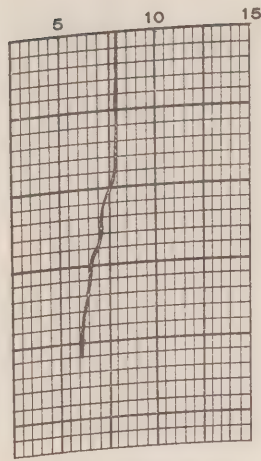
Daily bathythermograms
and
Ocean series bathythermograms

NOTE: All bathythermograph traces following,
are 0.8° C. too high!

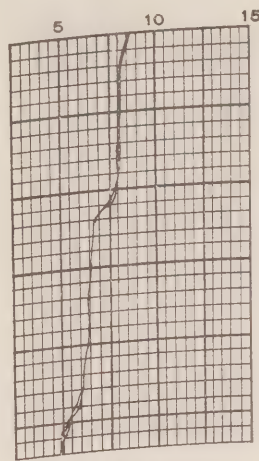
C.C.G.S. "Stonetown", Patrol #56



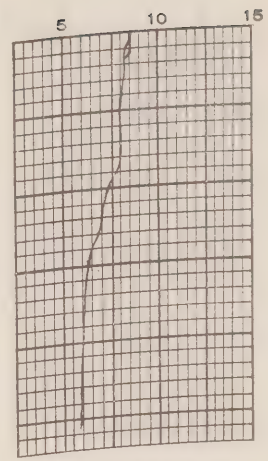
63/05/25/02.0
50°00'n
144°40'w



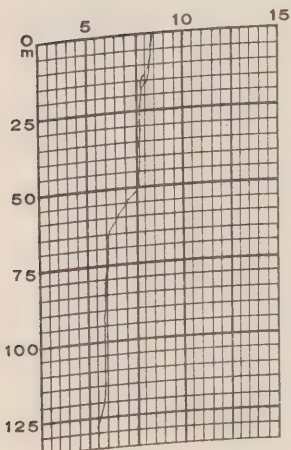
63/05/26/02.0
49°53'n
144°45'w



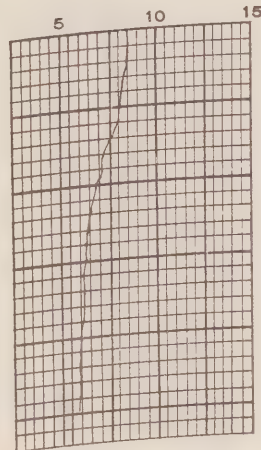
63/05/27/02.0
49°55'n
144°48'w



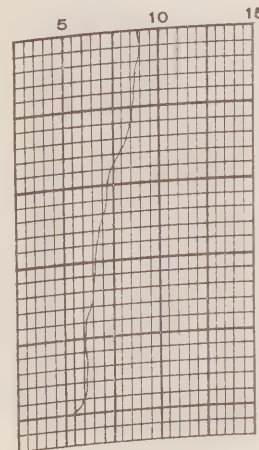
63/05/28/01.5
50°04'n
145°00'w



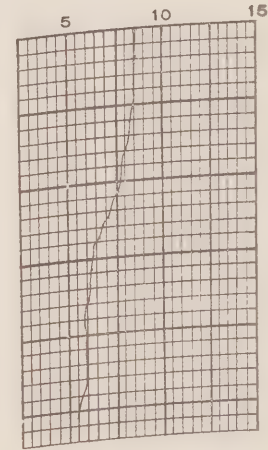
63/05/29/01.5
50°14'n
144°52'w



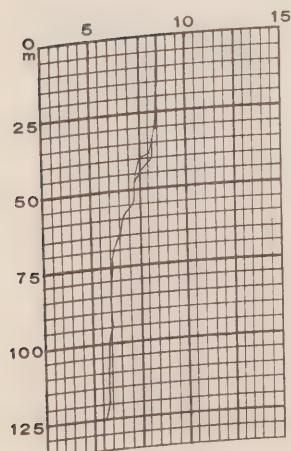
63/05/30/01.5
50°07'n
145°00'w



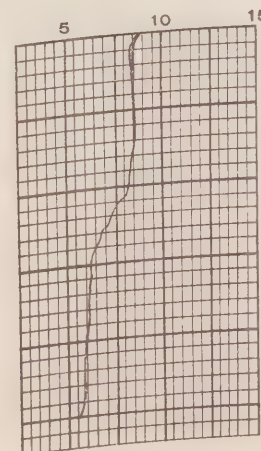
63/05/31/01.5
49°58'n
144°48'w



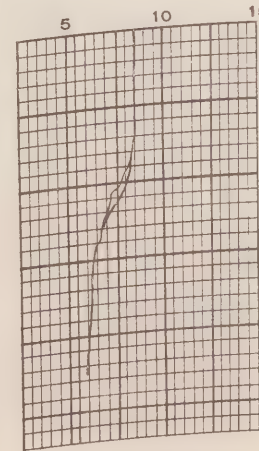
63/06/01/01.5
50°10'n
145°00'w



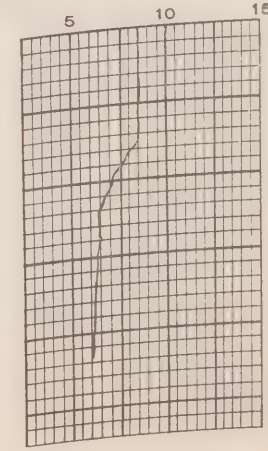
63/06/02/01.5
50°03'n
145°00'w



63/06/03/01.5
50°00'n
145°00'w



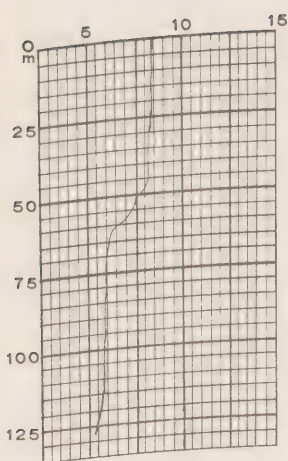
63/06/04/01.5
50°00'n
144°50'w



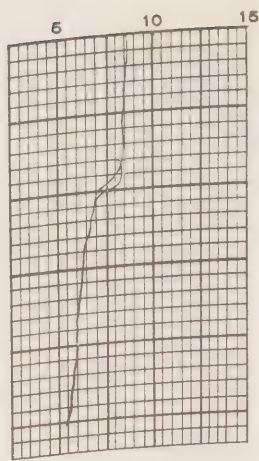
63/06/05/01.5
49°57'n
145°12'w

All traces 0.8°C too high !

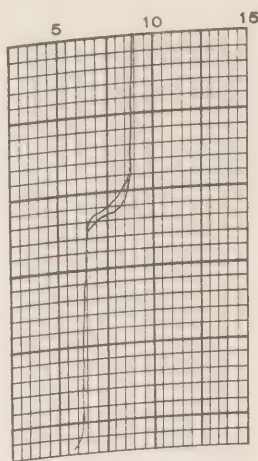
C.C.G.S. "Stonetown", Patrol #56



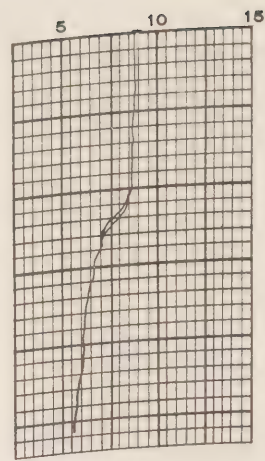
63/06/06/01.5
50°00'N
145°12'W



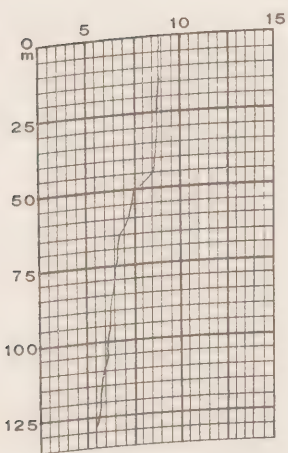
63/06/07/01.5
50°06'N
146°56'W



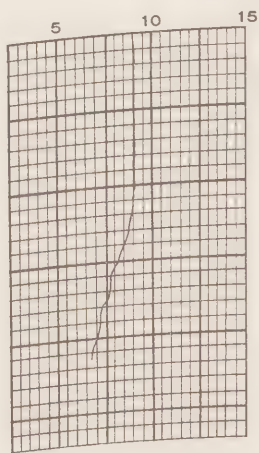
63/06/08/01.5
49°55'N
145°15'W



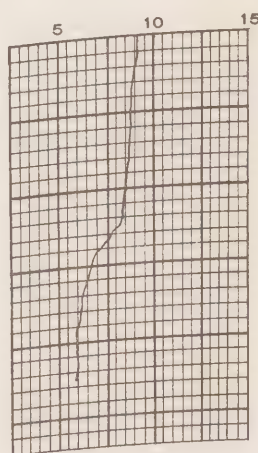
63/06/09/01.5
50°02'N
145°03'W



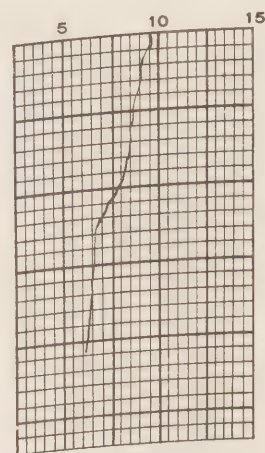
63/06/10/01.5
49°52'N
145°00'W



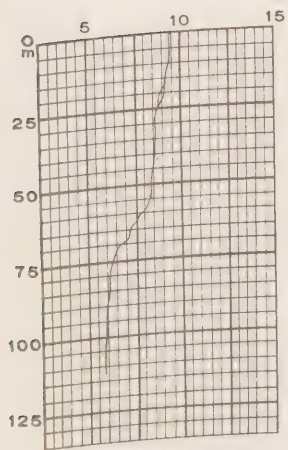
63/06/11/01.5
50°02'N
144°42'W



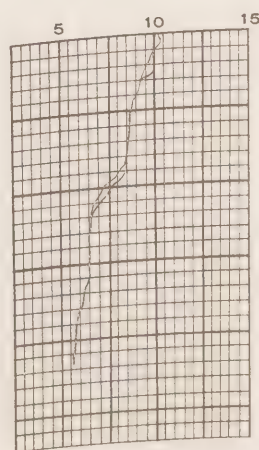
63/06/12/01.5
50°02'N
144°55'W



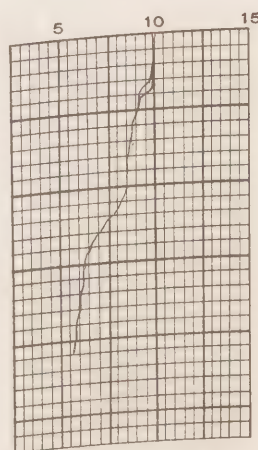
63/06/13/01.5
49°58'N
144°45'W



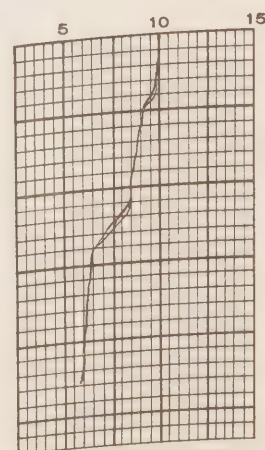
63/06/14/01.5
50°12'N
144°53'W



63/06/15/01.5
49°57'N
145°00'W



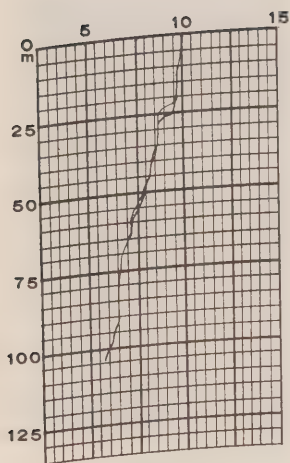
63/06/16/01.5
49°52'N
145°07'W



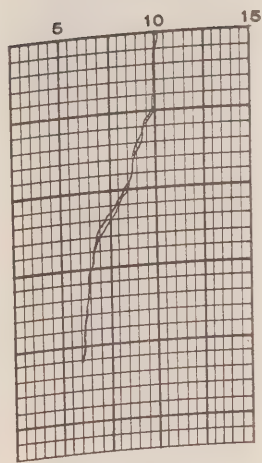
63/06/17/01.5
50°00'N
145°15'W

All traces 0.8°C too high !

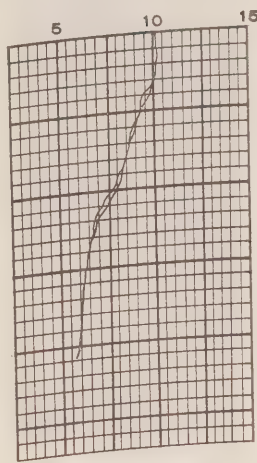
C.C.G.S "Stonetown", Patrol #56



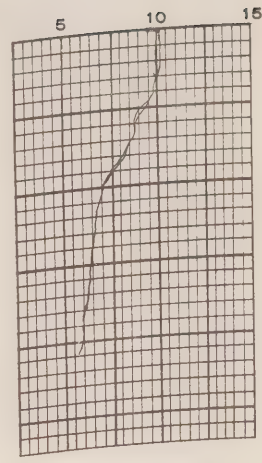
63/06/18/01.5
50°00'n
144°52'w



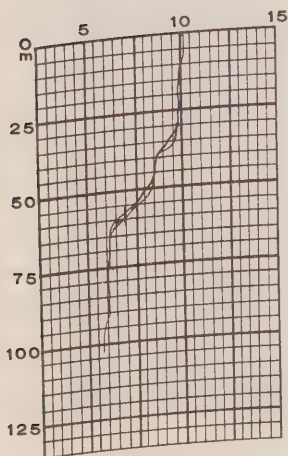
63/06/19/01.5
49°55'n
144°50'w



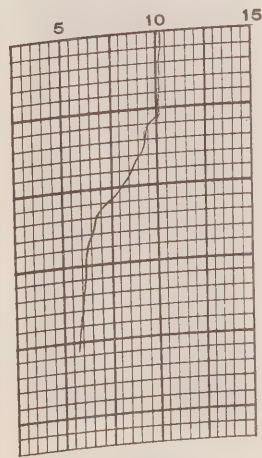
63/06/20/01.5
50°00'n
144°55'w



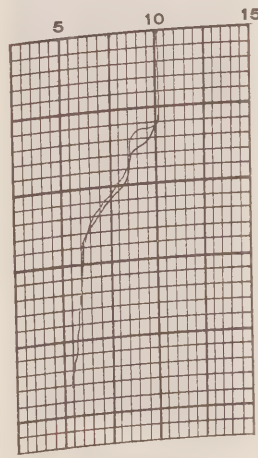
63/06/21/01.5
50°03'n
145°08'w



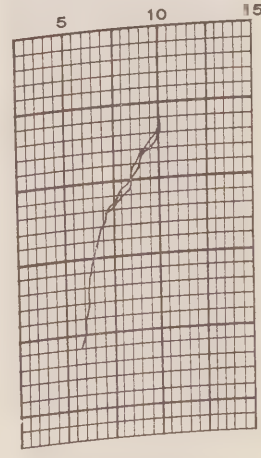
63/06/22/01.5
50°00'n
145°12'w



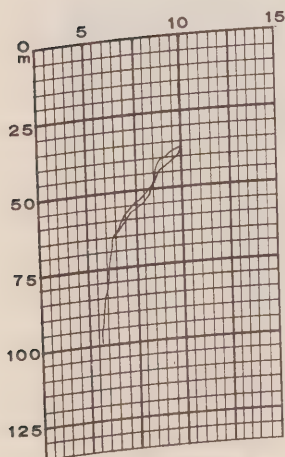
63/06/23/01.5
50°00'n
144°52'w



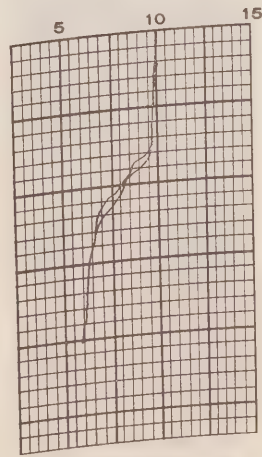
63/06/24/01.5
50°00'n
145°07'w



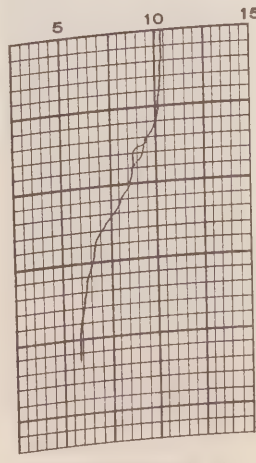
63/06/25/01.5
49°57'n
145°10'w



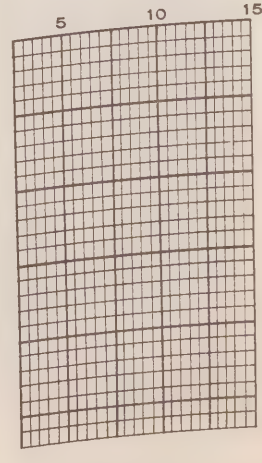
63/06/26/01.5
50°02'n
145°07'w



63/06/27/01.5
50°05'n
145°12'w

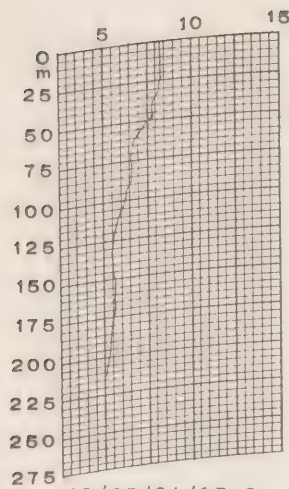


63/06/28/01.5
50°03'n
145°03'w

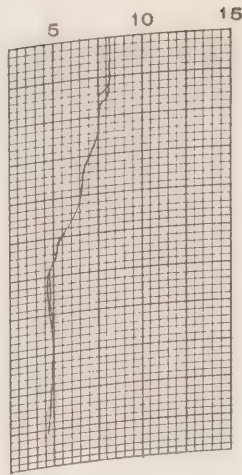


All traces 0.8°C too high

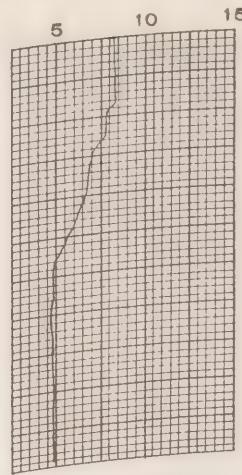
Patrol No. 56, C.C.G.S. "Stonetown"



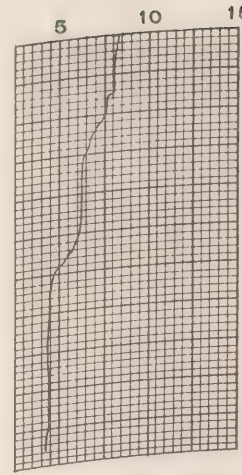
63/05/24/17.0
49°50'n
141°40'w



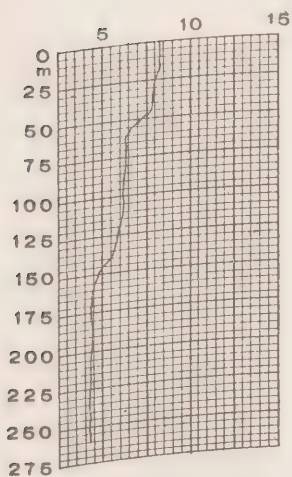
63/05/25/17.0
49°55'n
144°45'w



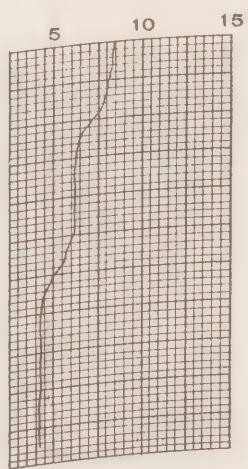
63/05/26/17.0
49°47'n
144°48'w



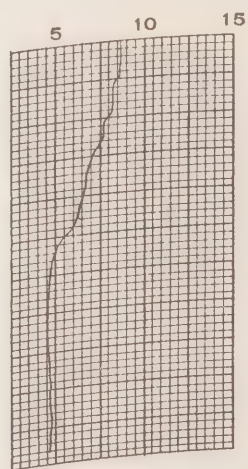
63/05/27/17.0
50°02'n
145°00'w



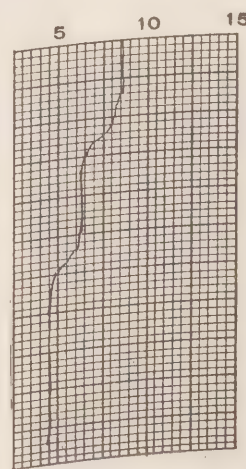
63/05/28/17.0
50°13'n
144°52'w



63/05/29/17.0
50°10'n
145°00'w

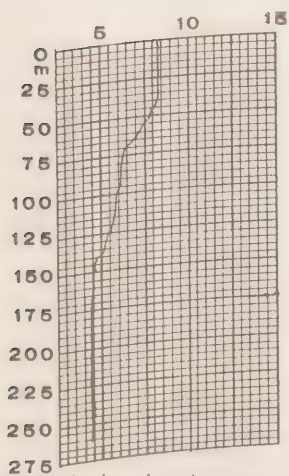


63/05/30/17.0
49°54'n
144°56'w

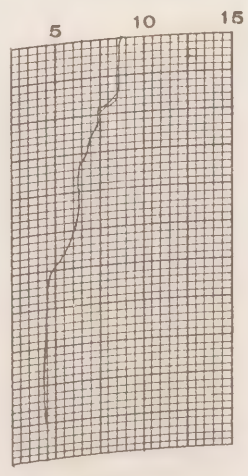


63/05/31/17.0
50°13'n
144°55'w

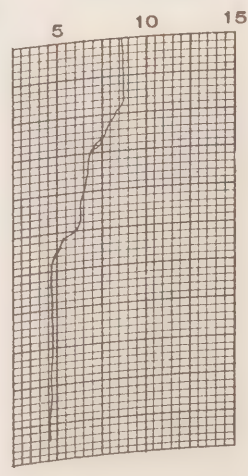
All traces 0.8°C too high !



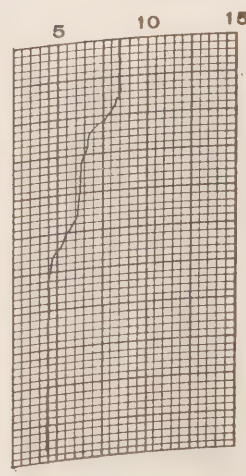
63/06/01/17.0
49°56'n
145°25'w



63/06/02/17.0
50°04'n
145°14'w

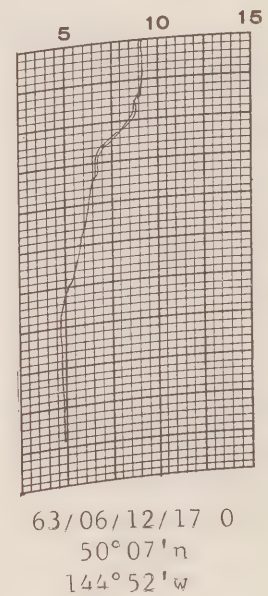
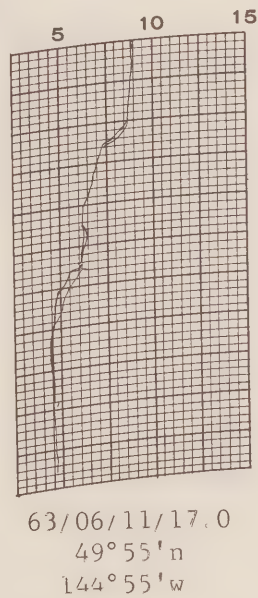
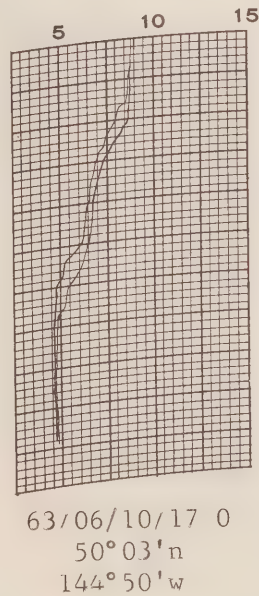
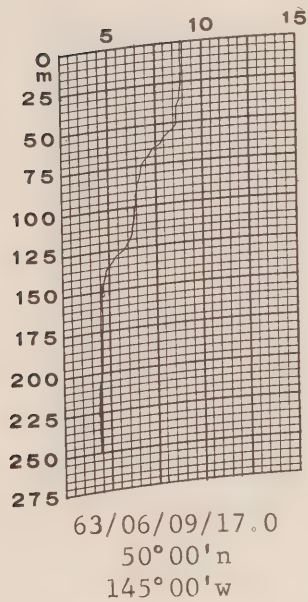
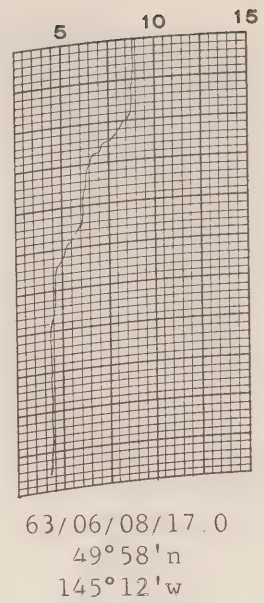
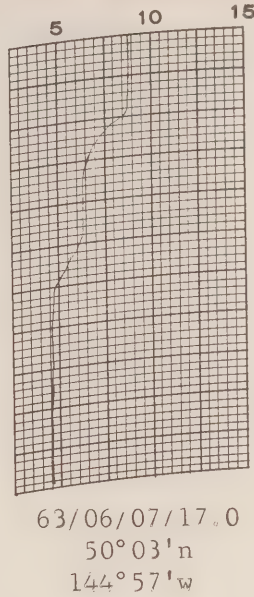
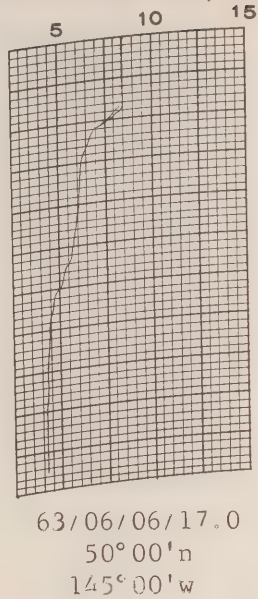
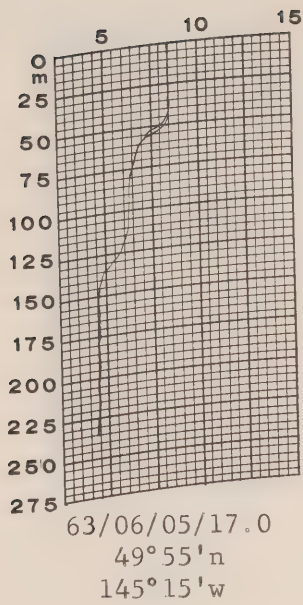


63/06/03/17.0
49°50'n
145°00'w

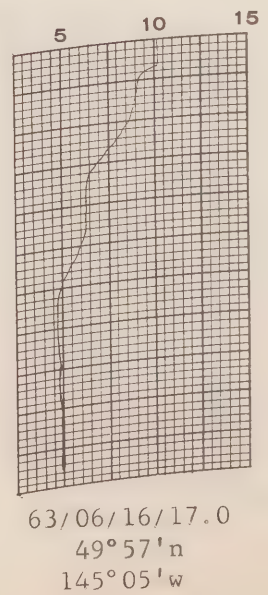
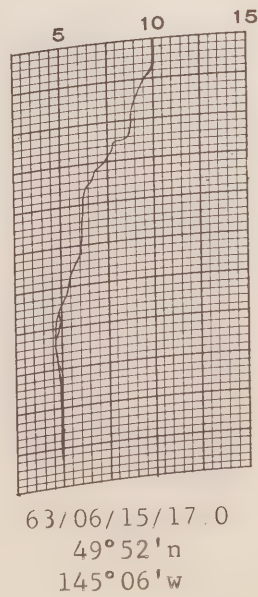
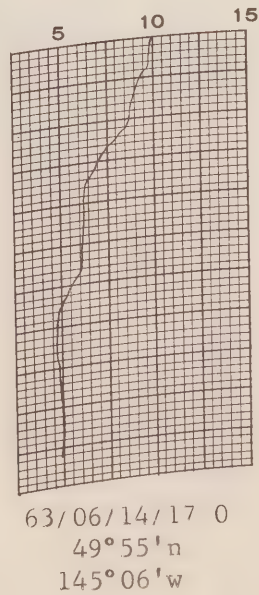
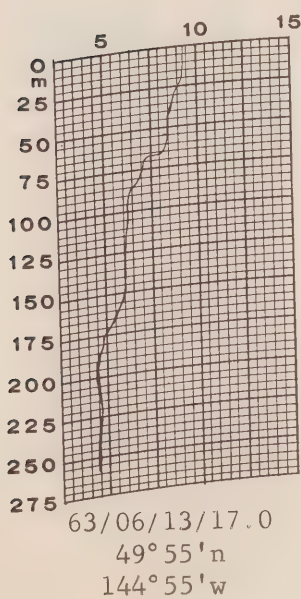


63/06/04/17.0
49°53'n
145°20'w

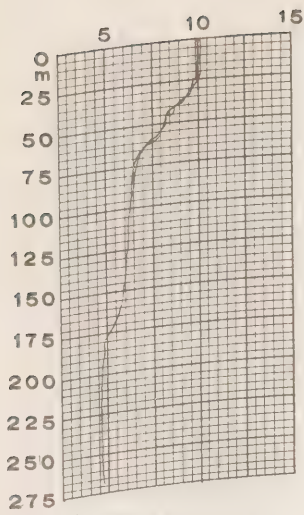
Patrol No 56, C.C.G.S. "Stonetown"



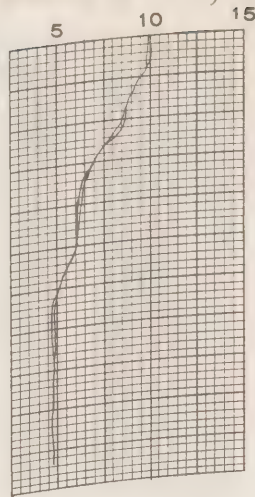
All traces 0.8°C too high!



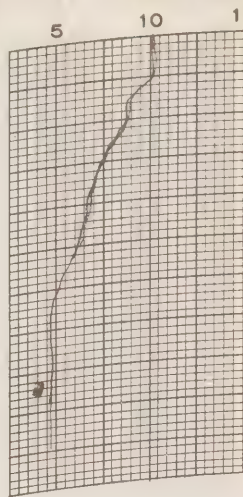
Patrol No 56, C.C.G.S "Stonetown"



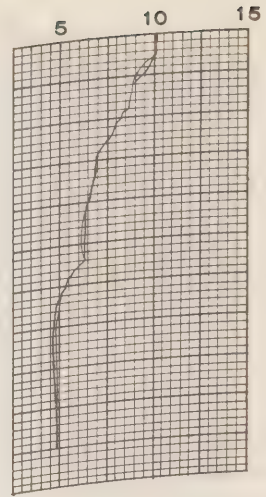
63/06/17/17.0
50°03'N
144°52'W



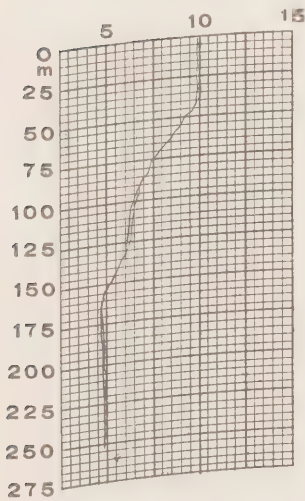
63/06/18/17.0
49°55'N
144°55'W



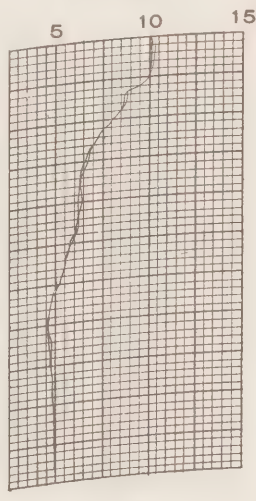
63/06/19/17.0
50°00'N
144°55'W



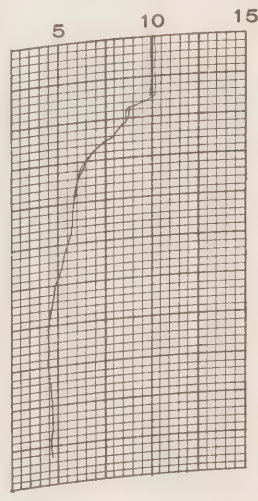
63/06/20/17.0
50°02'N
145°06'W



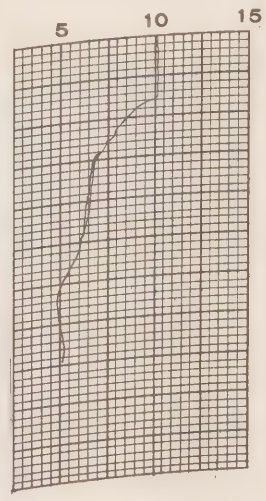
63/06/21/17.0
50°03'N
145°23'W



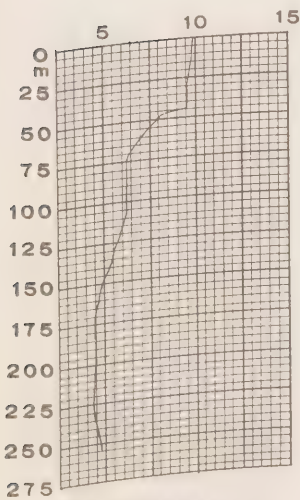
63/06/22/17.0
49°55'N
145°00'W



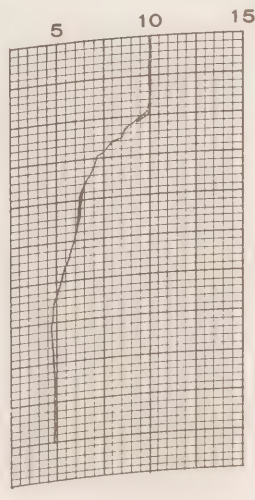
63/06/23/17.0
49°57'N
145°05'W



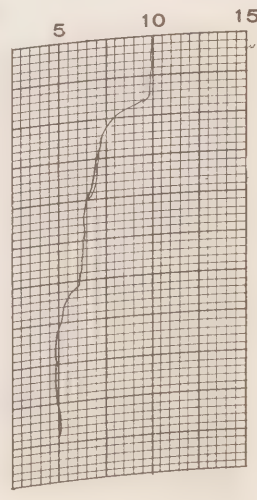
63/06/24/17.0
49°45'N
145°00'W



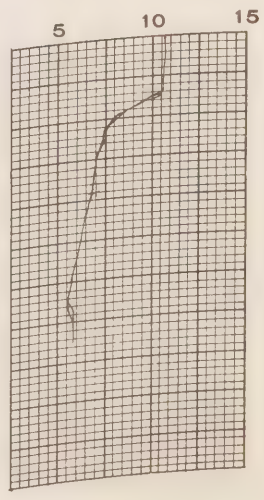
63/06/25/17.0
50°00'N
145°00'W



63/06/26/17.0
50°00'N
145°17'W



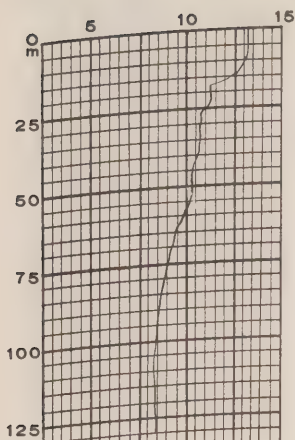
63/06/27/17.0
50°05'N
145°00'W



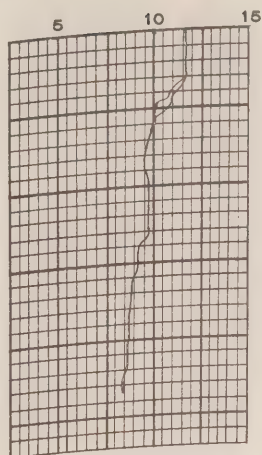
63/06/28/17.0
49°45'N
142°40'W

All traces 0.8°C too high !

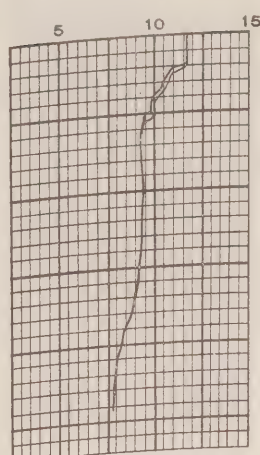
Patrol No. 56, C.C.G.S. "Stonetown", OCEAN Series



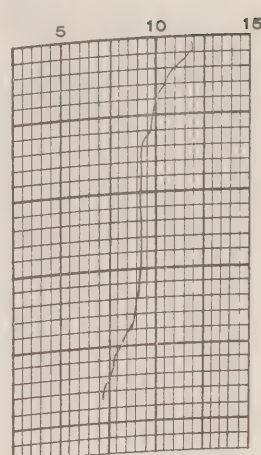
63/05/22/06.0
48°42'n
126°40'w



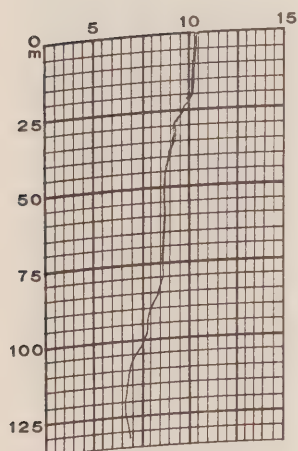
63/05/22/14.5
48°42'n
128°40'w



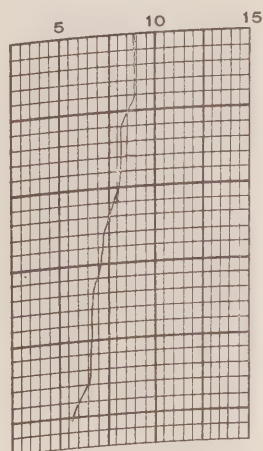
63/05/22/20.4
48°55'n
130°40'w



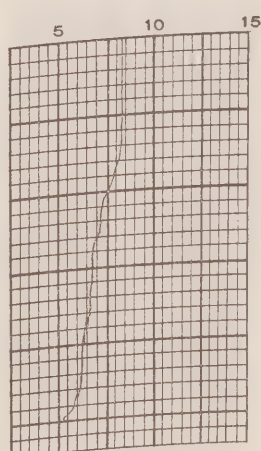
63/05/23/03.2
49°07'n
132°40'w



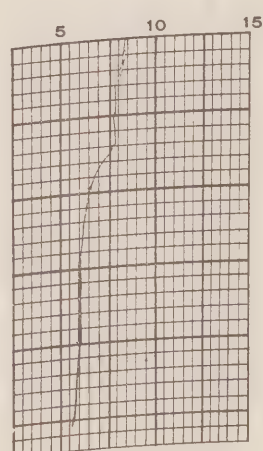
63/05/23/17.2
49°25'n
136°40'w



63/05/24/06.7
49°50'n
140°40'w

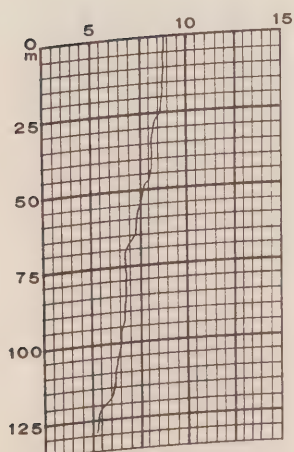


63/05/26/17.7
49°47'n
144°47'w

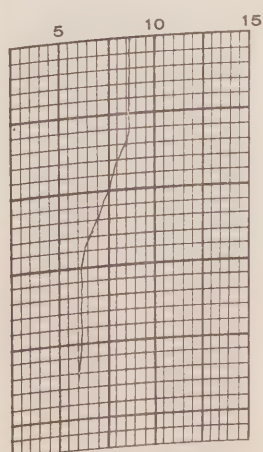


63/05/28/17.7
50°13'n
144°52'w

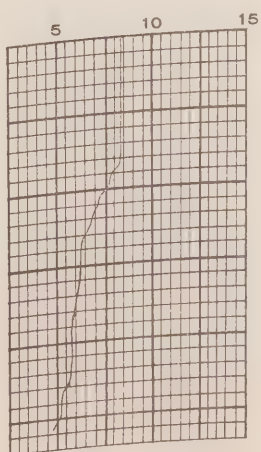
All traces 0.8°C too high!



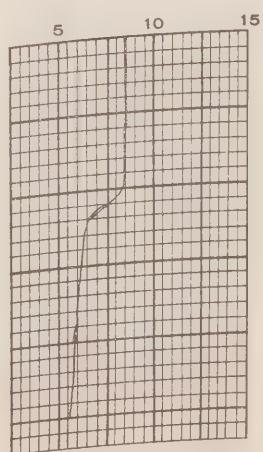
63/05/30/17.8
49°54'n
144°56'w



63/06/02/17.8
50°04'n
145°14'w

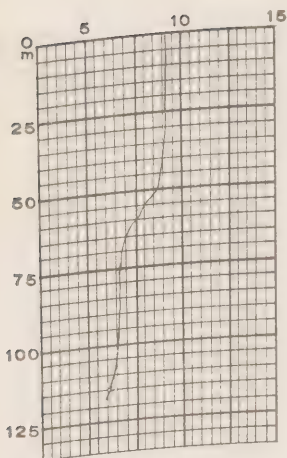


63/06/04/18.2
49°53'n
145°20'w

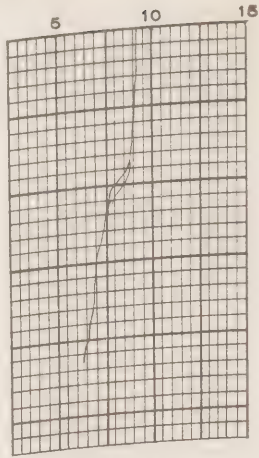


63/06/06/17.5
50°00'n
145°00'w

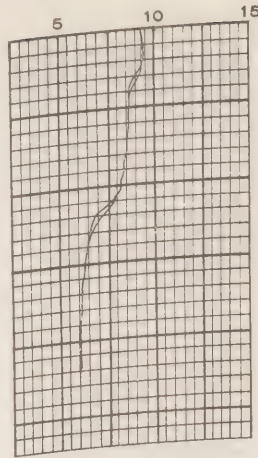
Patrol No. 56, C.C.G.S. "Stonetown", OCEAN Series



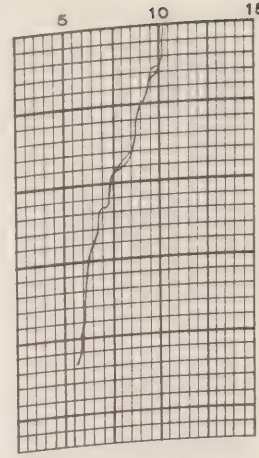
63/06/09/17.7
50°00'N
145°00'W



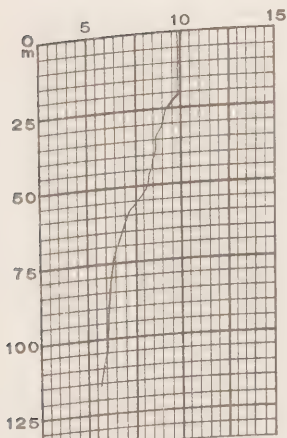
63/06/11/17.8
50°00'N
144°55'W



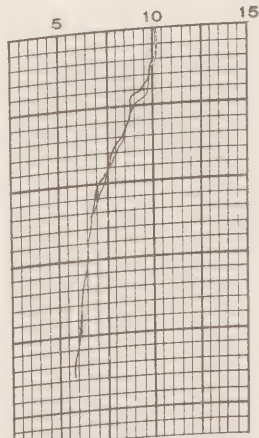
63/06/13/17.0
50°07'N
144°55'W



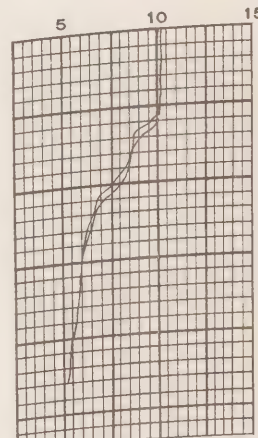
63/06/16/17.0
49°57'N
145°10'W



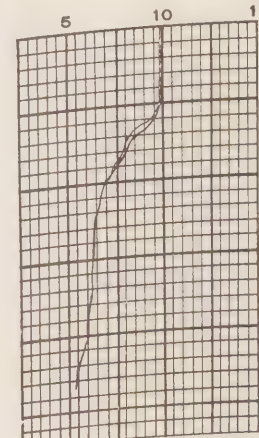
63/06/18/17.8
49°55'N
144°55'W



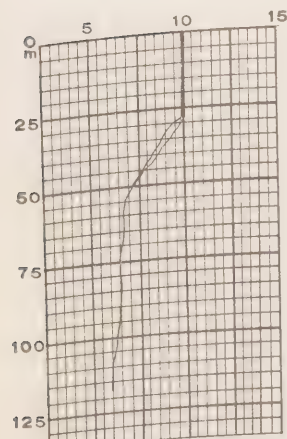
63/06/20/17.0
50°02'N
145°06'W



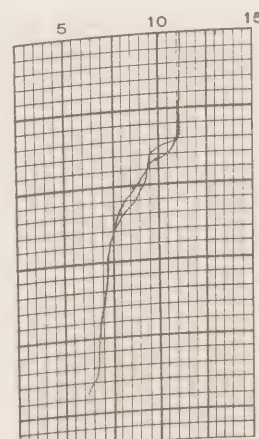
63/06/23/17.0
49°57'N
145°05'W



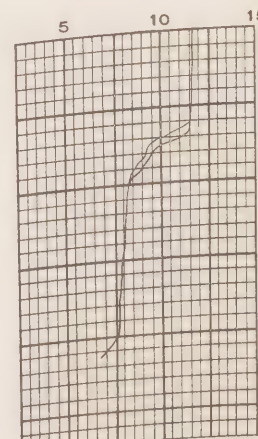
63/06/25/18.2
50°00'N
145°00'W



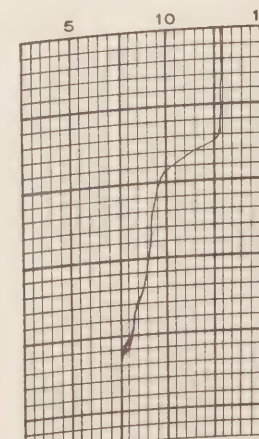
63/06/27/17.3
50°05'N
145°00'W



63/06/29/02.7
49°40'N
140°00'W



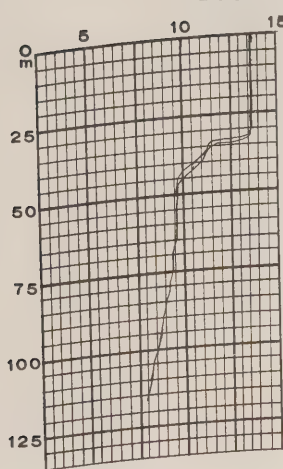
63/06/29/13.0
49°25'N
136°40'W



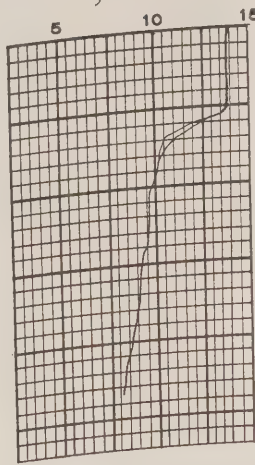
63/06/30/01.2
49°07'N
132°40'W

All traces 0.8°C too high

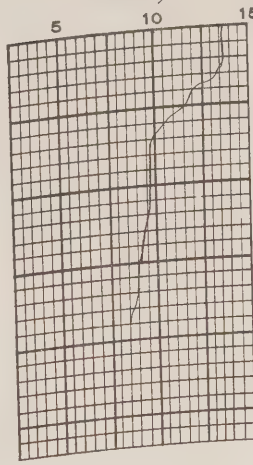
Patrol No. 56, C.C.G.S. "Stonerown", OCEAN Series



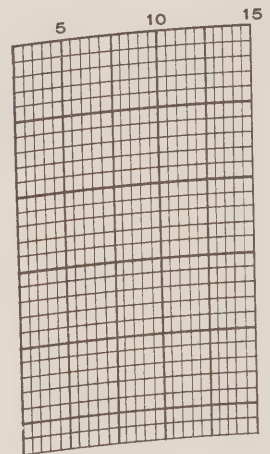
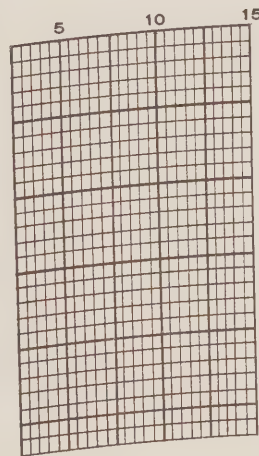
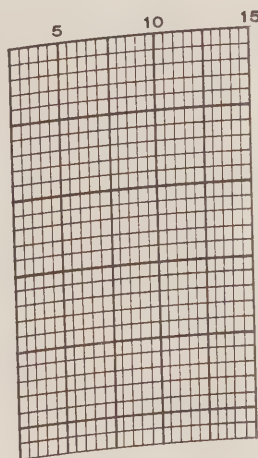
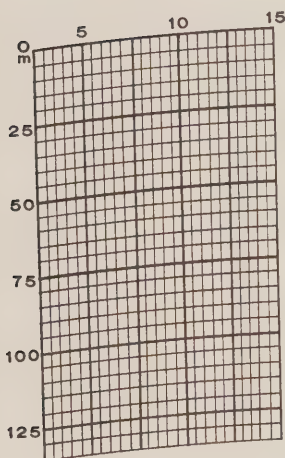
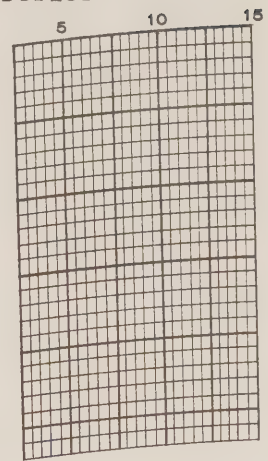
63/06/30/07.3
49°00'N
131°00'W



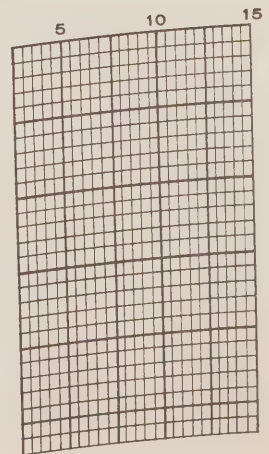
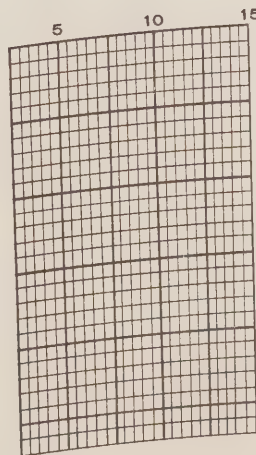
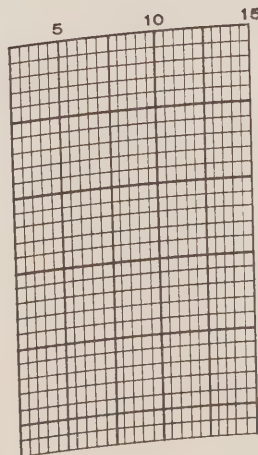
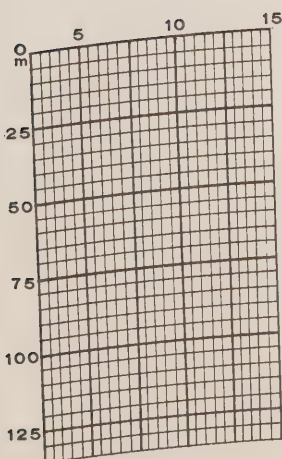
63/06/30/12.8
48°48'N
128°48'W



63/06/30/19.7
48°42'N
126°40'W



All traces 0.8°C too high !





SECTION V

Surface salinity data

Surface salinity observations, Ocean Weather Station "P"
taken at 0200 G.M.T.

Date	Position	Salinity ‰
Survey P-63-2, C.C.G.S. "St. Catharines"		
April 10, 1963	48°56' n. 129°40' w.	32.377
11	49°05' 131°40'	32.513
11	49°15' 133°40'	32.414
11	49°23' 135°40'	32.509
11	49°30' 137°40'	32.490
12	49°33' 138°40'	32.420
13	49°53' 143°40'	32.459
16	50°00' 145°00'	32.579
17	50°00' 145°00'	32.548
18	50°00' 145°00'	32.578
19	49°43' 144°13'	32.550
20	50°00' 145°00'	32.605
21	50°02' 144°58'	32.587
22	50°00' 145°00'	32.603
23	50°03' 145°03'	32.589
24	50°02' 144°57'	32.549
25	50°00' 145°00'	32.572
26	50°00' 145°00'	32.574
27	50°00' 145°04'	32.642
28	50°00' 145°00'	32.631
29	50°02' 144°53'	32.569
30	49°59' 144°58'	32.655
May 1	49°58' 144°58'	32.614
2	50°00' 144°56'	32.610
3	49°59' 145°00'	32.606
4	49°59' 144°59'	32.594
5	50°03' 145°01'	32.581
6	50°02' 145°03'	32.611
7	49°50' 145°00'	32.596
8	50°02' 145°03'	32.666
9	49°55' 144°50'	32.573
10	49°58' 144°58'	32.680
11	50°00' 144°52'	32.607
12	49°58' 144°58'	32.633
13	50°01' 144°59'	32.617
14	49°58' 145°05'	32.627
16	50°03' 144°50'	32.621
17	50°03' 145°03'	32.597
19	50°00' 145°00'	32.573
20	50°01' 145°00'	32.585
21	49°59' 145°01'	32.698
22	50°00' 145°00'	32.609
23	50°00' 144°58'	32.676
24	50°00' 145°00'	32.692

Surface salinity observations, Ocean Weather Station "P"
taken at 0200 G.M.T.

Date	Position		Salinity ‰
Survey P-63-2, C.C.G.S. "St. Catharines"			
May 25, 1963	49°30' n.	137°40' w.	32.527
25	49°23'	135°40'	32.569
25	49°15'	133°40'	32.531
26	49°06'	131°40'	32.485
26	48°56'	129°40'	32.068
C.C.G.S. Stonetown Patrol #56			
May 25, 1963	50°00'	144°40'	32.668
26	49°53'	144°45'	32.369
27	49°55'	144°48'	32.612
28	50°04'	145°00'	32.255
29	50°14'	144°52'	32.565
30	50°07'	145°00'	32.581
31	49°58'	144°48'	32.619
June 1	50°10'	145°00'	32.646
2	50°03'	145°00'	32.632
3	50°00'	145°00'	32.573
4	50°00'	144°50'	32.647
5	49°57'	145°12'	32.592
6	50°00'	145°12'	32.575
7	50°06'	144°56'	32.564
8	49°55'	145°15'	32.590
9	50°02'	145°03'	32.559
10	49°52'	145°00'	32.217
11	50°02'	144°42'	32.561
12	50°03'	144°55'	32.572
13	49°58'	144°45'	32.664
14	50°12'	144°53'	32.572
15	49°55'	145°15'	32.549
16	50°02'	145°03'	32.583
17	50°00'	145°15'	32.503
18	50°00'	144°52'	32.539
19	49°55'	144°50'	32.531
20	50°00'	144°55'	32.536
21	50°03'	145°08'	32.538
22	50°00'	145°12'	32.546
23	50°00'	144°52'	32.562
24	50°00'	145°07'	32.559
25	49°57'	145°10'	32.571
26	50°02'	145°07'	32.548
27	50°05'	145°12'	32.415
28	50°03'	145°03'	32.531

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No. 4

1963 DATA RECORD SERIES

Five Arctic Surveys

(C. R. N. 363, 364, 365, 366, 367)

Programmed by the Canadian Committee on Oceanography

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Five Summer Surveys
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NORTHWEST TERRITORIES

Arctic Unit Montreal

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DESCRIPTION
of the machine-generated
DATA RECORDS

INTRODUCTION

The following section is devoted to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms are transferred to punch cards for subsequent electronic data processing.

The data are processed on an IBM 1620 computer using the OCEANS II program (Sauer, C and Fofonoff, N. P., 1963) .

Besides computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and interpolation at Standard Oceanographic Depths.

After the data have been processed, the data-record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print out on continuous duplimat masters. The duplimat masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a Standard Deviation (σ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "General Information" of Section II of the Data Record.

The measurement error estimate of a specific observation is stated as a multiple of the standard deviation derived as above and entered in a column immediately to the right of the report variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, i.e., $1\sigma = A$, $2\sigma = B$, etc. (In the data record $1\sigma (A)$ is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Ratnay. A parabola is fitted through 3 values of a given variable (T, S, O₂) considered as a function of depth. The two interpolation parabolas require a total of 4 points (observed depths). The middle points are common to both parabolas. The average of the 2 values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement under normal routine field conditions (σ) by:

$$\frac{\sigma_i}{\sigma} = \left\{ \left(\frac{\Delta V_i}{\sigma} \right)^2 + \sum_{n=j-2}^{j+1} \left(\gamma_n \right)^2 \left(\frac{\sigma_n}{\sigma} \right)^2 \right\}^{\frac{1}{2}}, \text{ where}$$

σ_i = Standard deviation of the combined error estimates at standard oceanographic depth,

$$\Delta V_i = \frac{1}{3} (V_{i,1} - V_{i,2}),$$

the interpolation error estimate of variable "V" at standard oceanographic depth.

γ = Interpolation polynomial coefficient.

Z_j = Observed depth.

Z_i = Standard oceanographic depth, such that: $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of this fraction $\frac{\sigma_i}{\sigma}$ is reported in the Data Record, e.g.: 2 = B, 3 = C, etc.

With respect to the interpolated value of the Salinity variable if reported to three decimal digits, the "interpolation error estimate" is given only when $\frac{\sigma_i}{\sigma} \geq 2$. If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE

NUMBER:

Assigned by the Institute. Starts off with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE

NUMBER:

Indicates the chronological order in which the stations were observed.

(3) LATITUDE:

Latitude and longitude give the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE:

Designates the geographic area code (see marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR:

The time (Greenwich Mean Time) at which the environmental surface observations were made.

It is reported to tenths of hours.

If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH

The sounding: The measured distance (by any method) from surface to bottom, corrected and reported in meters.

- (11) MAXIMUM SAMPLING DEPTH: A code to indicate the deepest sampling depth.
 00 m - 50 m = 00
 51 m - 150 m = 01
 151 m - 250 m = 02
 etc.
- (12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).
- (13) WATER COLOUR: A code based on the percentage of yellow (see table 2).
- (14) WATER TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage; the General Information Chapter in Section II of the data record will state which method was used.
- (15) WAVES 1
 ($D_w D_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (16) WAVES 2
 ($D_w D_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system.
 (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:- wind variable or direction unknown.
- (18) WIND FORCE
 (WND-FCE): Beaufort Notation (See Table 6).
 WIND SPEED
 (WND-SPD): Anemometer reading in metres per second.
- (19) BAROMETER: The barometric pressure expressed in millibars: the General Information Chapter in Section II of the data record will state the type of instrument, and whether corrections have been applied.
- (20) AIR TEMPERATURE: To 1/10 of a degree Centigrade.

- (21) WET BULB: To 1/10 of a degree Centigrade.
- (22) WW CODE: Present Weather Code (See Table 7).
Ref: WMO Code 4677.
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8).
Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9).
Ref: WMO Code 2700.
- (25) VISIBILITY: Visibility at the surface (See Table 10).
Ref: WMO Code 4300.
- (26) STATION: A strictly local station reference number,
usually assigned prior to carrying out
a cruise.
- (27) HOURS AFTER
HIGH WATER: Indicates the state of the tide for nearshore
observations.

OBSERVED DATA HEADINGS

(1) GMT (2) DEPTH (3) TEMP (4) SAL (5) OXYGEN (6) SGMT
(7) SOUND (8) PO₄ (9) -P- (10) NO₂ (11) NO₃ (12) SiO₃ (13) pH.

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical observations were collected during the cruise.

- (1) G. M. T. The Greenwich Mean Time of in-situ thermometer inversion and sea water sample collection.

When a multiple cast was initiated before and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement:
"MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH:

The depth in meters is computed from the meter wheel reading, the wire angle, and the corrected unprotected thermometer reading at the moment the oceanographic bottle reversed.

Alphabetical characters "B" to "I", (if present), immediately to the right of this column, are measurement error estimates (see: "Introduction" to Section II of the data record).

(3) TEMPERATURE:

In-situ temperatures from deepsea reversing thermometers graduated in 0.1° C. intervals, and read to 0.01° C. Surface temperature collection procedures as indicated in the chapter "Observation Procedures" of Section I, and/or under "General Information" of Section II.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(4) SALINITY:

Salinity as defined by:

$$S = 0.03 + 1.805 C1 \text{ ‰}$$

a. 1/100 parts per 1000, or

b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (2).

In case b: no error estimate indication is provided for, but the additional decimal digit takes its place.

(5) OXYGEN:

The concentration of dissolved oxygen as expressed in millilitres per litre to 2 decimal places.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(6) SIGMA-T:

The density as defined by $\sigma_t = (\text{Specific gravity} - 1) \times 1000$, and expressed in milligrams per cm^3 i.e., Sigma-T reported as 2456 reads 24.56 milligrams/ cm^3 and corresponds to a specific gravity of 1.02456

- (7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula, expressed in terms of temperature, salinity and total pressure.
- (8) PO_4 Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre
- (9) -P- Total Phosphorus reported to hundredths of microgram-atoms per litre
- (10) NO_2 Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre -No dissolved nitrogen included-
- (11) NO_3 Nitrate-Nitrogen reported to tenths of microgram-atoms per litre
- (12) SiO_3 Silicate-Silicon reported in whole microgram-atoms per litre
- (13) pH The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

INTERPOLATED DATA HEADINGS

(1) DEPTH (2) TEMP (3) SAL (4) OXYGEN (5) SGMT (6) SOUND (7) DELTA-D (8) POT-EN (9) SV A.
--

- (1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

(2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(3) SALINITY

A. The reported salinity values are observed to three decimal places.

- (i) the interpolation error estimate is less than twice the standard deviation of measurement

-the interpolated value is reported to three decimal places (e.g., 30.139).

- (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.

-the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e.g., 29.23C).

B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.

-the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e.g., 30.59B).

(4) OXYGEN: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(5) SIGMA-T: Computed from Temperature and Salinity values at standard oceanographic depth, and expressed in mgms/cm^3 (e.g., 23.19).

(6) SOUND VELOCITY: Computed from temperature and salinity values at standard oceanographic depth, and expressed in tenths of metres per second (e.g., 1462.3 m/sec).

(7) DELTA-D:

The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P [\alpha(T, S, P) - \alpha_{35, 0, P}] dp$$

ΔD is expressed in dynamic metres (10^5 ergs/gram) and recorded to three decimal places (e. g., 2.345 dyn. metres).

(8) POTENTIAL
ENERGY
ANOMALY:

The Potential energy anomaly χ as defined by:

$$\chi = \frac{1}{g} \int_0^P \rho \delta dp = \int_0^z \rho \delta dz$$

χ is expressed in units of 10^8 ergs/cm² and recorded to two decimal places (e. g., 116.44).

(9) SPECIFIC
VOLUME
ANOMALY:

The specific volume anomaly as defined by;

$$\delta = \alpha - \alpha_{35, 0, P}$$

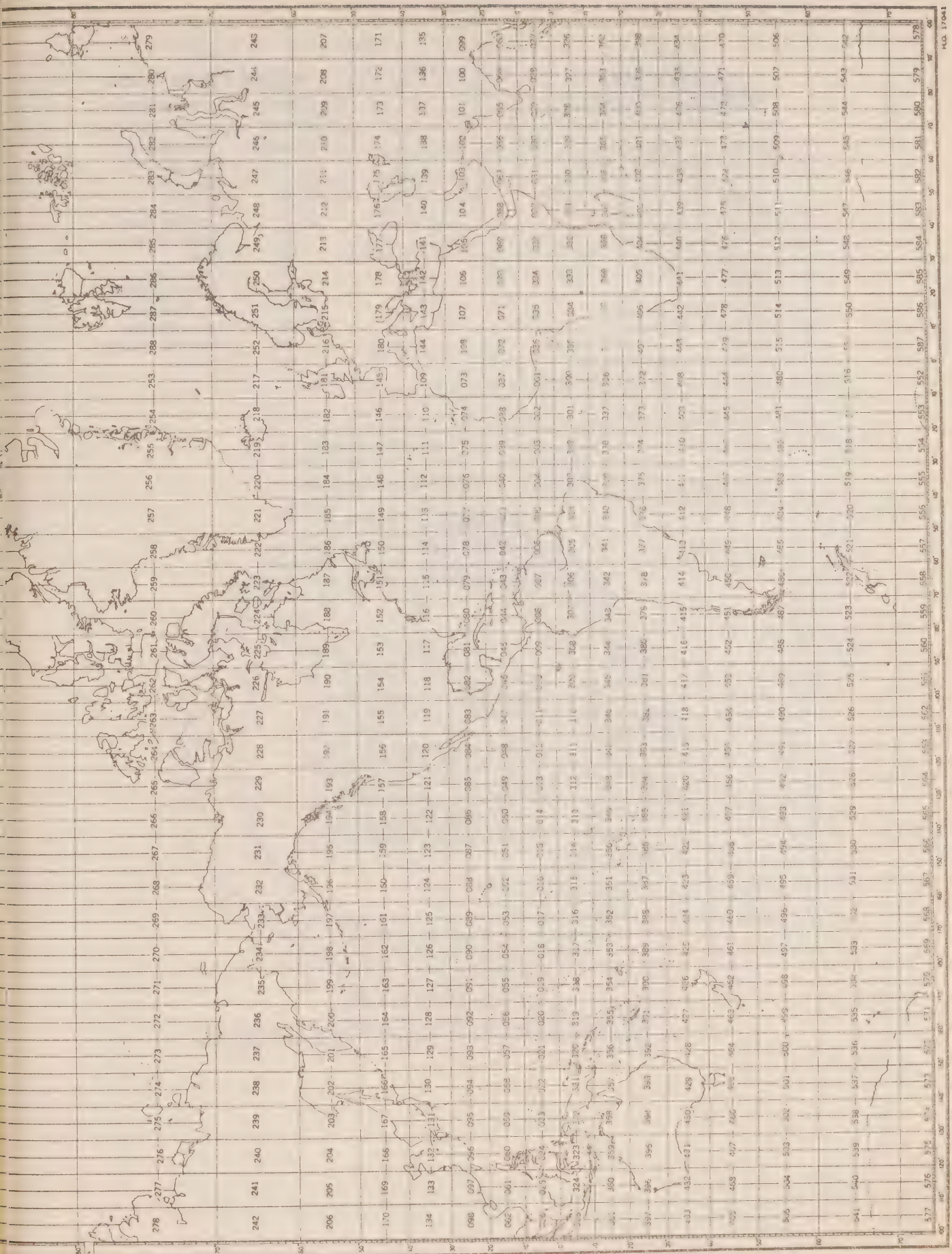
δ is conventionally reported as $10^5 \delta$, and recorded to one decimal place (e. g., 0.001234 is recorded as 123.4).

SPECIAL CHARACTERS

† (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side refers to the appropriate level.

* (Asterisk) : to the left of the "Interpolated Data" marks standard depth levels according to the following specifications:

If three or more standard depth levels fall within an observed depth interval, the third and all consequent levels within that interval are preceded by an asterisk to indicate that more than two interpolations were carried out utilizing the same set of interpolation parabolas.



Marsden Square Chart

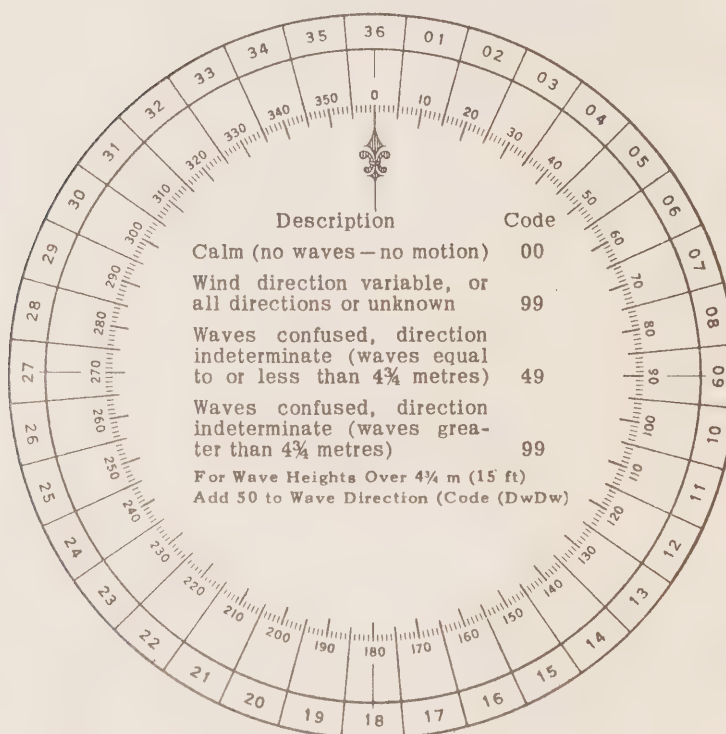
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (P_w)
(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (H_w)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than ¼ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	½ m (1½ ft)		1 5½ m (17½ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	1½ m (5 ft)		3 6½ m (21 ft)
4	2 m (6½ ft)		4 7 m (22½ ft)
5	2½ m (8 ft)		5 7½ m (24 ft)
6	3 m (9½ ft)		6 8 m (25½ ft)
7	3½ m (11 ft)		7 8½ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	4½ m (14 ft)		9 9½ m (30½ ft) or more
x	Height not determined		

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure		ww
No meteors except photometers	00	Cloud development not observed or not observable
	01	Clouds generally dissolving or becoming less developed
	02	State of sky on the whole unchanged
	03	Clouds generally forming or developing
Haze, dust, sand or smoke	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes
	05	Haze
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour
	10	Mist
	11	Patches of
	12	More of less continuous
	13	Lightning visible, no thunder heard
	14	Precipitation within sight, not reaching the ground or the surface of the sea
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station
	17	Thunderstorm, but no precepitation at the time of observation
	18	Squalls
19	Funnel clouds	
		characteristic change of the state of sky during the past hour
ww = 20 - 29		
		Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation
20		Drizzle (not freezing) or snow grains
21		Rain (not freezing)
22		Snow
23		Rain and snow or ice pellets, type (a)
24		Freezing drizzle or freezing rain
25		Shower(s) of rain
26		Shower(s) of snow, or of rain and snow
27		Shower(s) of hail, or of rain and hail
28		Fog or ice fog
29		Thunderstorm (with or without precipitation)
ww = 30 - 39		
		Duststorm, sandstorm, drifting or blowing snow
30		Slight or moderate duststorm or sandstorm
31		
32		Severe duststorm or sandstorm
33		
34		Heavy blowing snow
35		
36		Slight or moderate blowing snow
37		Heavy drifting snow
38		Slight or moderate blowing snow
39		Heavy blowing snow
ww = 40 - 49		
		Fog or ice fog at the time of observation
40		Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer
41		Fog or ice fog in patches
42		Fog or ice fog, sky visible
43		Fog or ice fog, sky invisible
44		Fog or ice fog, sky visible
45		Fog or ice fog, sky invisible
46		Fog or ice fog, sky visible
47		Fog or ice fog, sky invisible
48		Fog, depositing rime, sky visible
49		Fog, depositing rime, sky invisible

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

- | | | | |
|----|--|---|--------------------------------------|
| 50 | Drizzle, not freezing, intermittent | { | slight at time of observation |
| 51 | Drizzle, not freezing, continuous | | |
| 52 | Drizzle, not freezing, intermittent | { | moderate at time of observation |
| 53 | Drizzle, not freezing, continuous | | |
| 54 | Drizzle, not freezing, intermittent | { | heavy (dense) at time of observation |
| 55 | Drizzle, not freezing, continuous | | |
| 56 | Drizzle, freezing, slight | | |
| 57 | Drizzle, freezing, moderate or heavy (dense) | | |
| 58 | Drizzle and rain, slight | | |
| 59 | Drizzle and rain, moderate or heavy | | |

ww = 60 - 69 Rain

- | | | | |
|----|---|---|---------------------------------|
| 60 | Rain, not freezing, intermittent | { | slight at time of observation |
| 61 | Rain, not freezing, continuous | | |
| 62 | Rain, not freezing, intermittent | { | moderate at time of observation |
| 63 | Rain, not freezing, continuous | | |
| 64 | Rain, not freezing, intermittent | { | heavy at time of observation |
| 65 | Rain, not freezing, continuous | | |
| 66 | Rain, freezing, slight | | |
| 67 | Rain, freezing, moderate or heavy | | |
| 68 | Rain or drizzle and snow, slight | | |
| 69 | Rain or drizzle and snow, moderate or heavy | | |

70 - 79 Solid precipitation not in showers

ww

- | | | | |
|----|---|---|---------------------------------|
| 70 | Intermittent fall of snow flakes | { | slight at time of observation |
| 71 | Continuous fall of snow flakes | | |
| 72 | Intermittent fall of snow flakes | { | moderate at time of observation |
| 73 | Continuous fall of snow flakes | | |
| 74 | Intermittent fall of snow flakes | { | heavy at time of observation |
| 75 | Continuous fall of snow flakes | | |
| 76 | Ice prisms (with or without fog) | | |
| 77 | Snow grains (with or without fog) | | |
| 78 | Isolated starlike snow crystals (with or without fog) | | |
| 79 | Ice pellets, type (a) | | |

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

- | | | | |
|----|--|---|---|
| 80 | Rain shower(s), slight | | |
| 81 | Rain shower(s), moderate or heavy | | |
| 82 | Rain shower(s), violent | | |
| 83 | Shower(s) of rain and snow mixed, slight | | |
| 84 | Shower(s) of rain and snow mixed, moderate or heavy | | |
| 85 | Snow shower(s), slight | | |
| 86 | Snow shower(s), moderate or heavy | | |
| 87 | Shower(s) of snow pellets or ice pellets, type (b), with or without rain | { | - slight |
| 88 | or rain and snow mixed | | |
| 89 | Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder | { | - moderate or heavy |
| 90 | | | |
| 91 | Slight rain at time of observation | | |
| 92 | Moderate or heavy rain at time of observation | | thunderstorm during the preceding hour but not at time of observation |
| 93 | Slight snow, or rain and snow mixed or hail at time of observation | | |
| 94 | Moderate or heavy snow, or rain and snow mixed or hail at time of observation | | |
| 95 | Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation | { | thunderstorm at time of observation |
| 96 | Thunderstorm, slight or moderate, with hail at time of observation | | |
| 97 | Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation | | |
| 98 | Thunderstorm, combined with duststorm or sandstorm at time of observation | | |
| 99 | Thunderstorm, heavy, with hail at time of observation | | |

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
90	Less than 50 metres (less than 55 yards)
91	50-200 metres (approx. 55-220 yards)
92	200-500 metres (approx. 220-550 yards)
93	500-1,000 metres (approx. 550 yards- $\frac{5}{8}$ n.m.)
94	1-2 km (approx. $\frac{3}{8}$ -1 n.m.)
95	2-4 km (approx. 1-2 n.m.)
96	4-10 km (approx. 2-6 n.m.)
97	10-20 km (approx. 6-12 n.m.)
98	20-50 km (approx. 12-30 n.m.)
99	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

C.R.N. 363

Allen Bay and Penny Strait, N.W.T.

June 28 - August 14, 1962

by

Dr. A.W. Mansfield

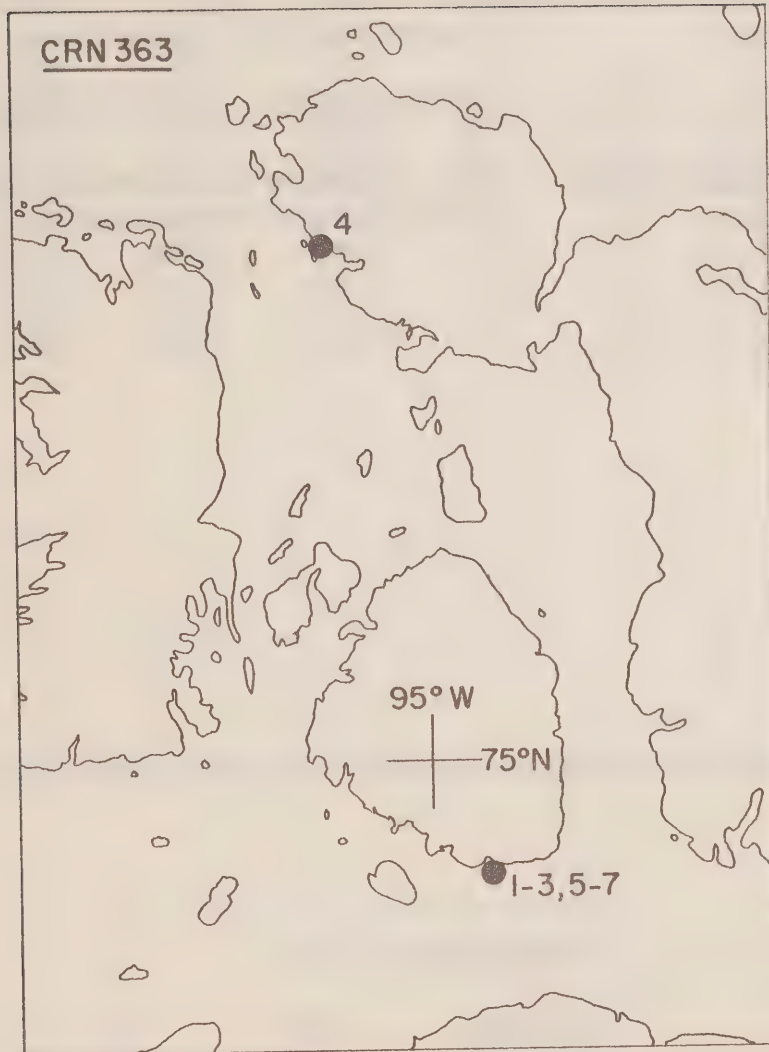
Mr. B. Beck

Mr. D. Robb

Introduction

One oceanographic station off Allen Bay, Cornwallis Island, was occupied 6 times between 28 June and 14 August, and a station in Penny Strait once on 17 July 1962.

The main purpose of the field work was the carrying out of a biological collecting programme which, in the marine environment, consisted of plankton, benthos, fish and mammal investigations. Physical and chemical observations were made to supplement the biological collecting. The field party was land-based, and marine stations were made from a small, outboard-powered boat. Oceanographic casts were done with a single bottle only.



GENERAL INFORMATION

Institute: Arctic Unit, Montreal.

Observation platform: Land-based party, using small craft.

Total number of stations occupied: 7

Water transparency: Was obtained using a Secchi Disc.

Air temperature: Was observed from a fixed thermometer.

Surface sea water temperature: Was obtained using a reversing thermometer, giving in-situ temperatures to 1/100°C.

The following Standard Deviations were used to express both measurement and interpolation error estimates:

<u>Temperature:</u>	0.02
<u>Salinity:</u>	0.04
<u>Oxygen:</u>	Not available

C-REF-NO 363	YR 1962	DEPTH 55	WAVES 1	AIR T 07.0	VIS
CONS. NO 001	MONTH 6	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 74-360N	DAY 28	NO.DPTH 10	WND-DIR 320	WW-CODE	
LON 94-130W	HR 20.1	W-COLOR	WND-FCE 03	CLD-TPE 6	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
218	0000	0030				
217	0001	0032	3255	925	2614	14474
215	0003	0029	3256	960	2615	14473
213	0005	0032	3255	928	2614	14474
211	0007	0037	3237	909	2599	14475
209	0010	-0051	3268	811	2628	14439
208	0015	-0099	3289	736	2647	14420
206	0020	-0105	3289	731	2647	14418
203	0030	-0105	3291	712	2648	14420
201	0050	-0107	3289	711	2647	14422

C-REF-NO 363	YR 1962	DEPTH 52	WAVES 1	AIR T 02.0	VIS
CONS. NO 002	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 74-360N	DAY 06	NO.DPTH 9	WND-DIR 200	WW-CODE	
LON 94-130W	HR 23.0	W-COLOR	WND-FCE 03	CLD-TPE 3	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 9	HW

O B S E R V E D

	GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
#244	0001		0075	3123	976	2506	14475
#242	0003		0074	3134	964	2514	14476
#241	0005		0035	3141	990	2522	14460
	239	0007	0048	3229	959	2592	14478
	238	0010	0061	3263	908	2619	14490
	236	0015	-0092	3268	792	2629	14421
	234	0020	-0092	3263	801	2625	14421
	232	0030	-0119	3291	713	2649	14414
	230	0050	-0126	3298	738	2655	14415

#MULTIPLE CAST CONTINUED NEXT DAY

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0086 E	3139 C		2518	14482	0000	00000	2797
0010	0061	3263		2619	14490	0023	00001	1838
0020	-0092	3263		2625	14421	0042	00004	1774
0030	-0119	3291		2649	14414	0058	00008	1550
0050	-0126	3298		2655	14415	0089	00020	1493

C-REF-NO 363	YR 1962	DEPTH 62	WAVES 1	AIR T	VIS
CONS. NO 003	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 74-360N	DAY 13	NO.DPTH 9	WND-DIR 140	WW-CODE	
LON 94-130W	HR 15.4	W-COLOR	WND-FCE 01	CLD-TPE	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
170	0001	0142	3041	1011	2436	14494
168	0003	0106	3060	1049	2453	14481
166	0005	0055	3103	997	2491	14464
164	0007	0056	3151	979	2529	14471
162	0010	-0007	3203	915	2574	14450
160	0015	-0082	3261	790	2623	14424
158	0020	-0110	3279	726	2639	14414
156	0030	-0094	3296	730	2652	14426
154	0050	-0101	3306	700	2660	14427

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0173 D	3035 B		2430	14507	0000	00000	3635
0010	-0007	3203		2574	14450	0030	00001	2265
0020	-0110	3279		2639	14414	0049	00004	1646
0030	-0094	3296		2652	14426	0065	00008	1520
0050	-0101	3306		2660	14427	0095	00020	1440

C-REF-NO 363	YR 1962	DEPTH		WAVES 1	AIR T	VIS
CONS. NO 004	MONTH 7	MXSAMPD	01	WAVES 2	WET B	STN 301
LAT 76-367N	DAY 17	NO.DPTH	10	WND-DIR	WW-CODE	
LON 96-238W	HR 03.0	W-COLOR		WND-SPD	CLD-TPE	
MARSD SQ 262		W-TRNSP		BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
046	0001	0357	3020		2404	14586
043	0003	0288	3158		2519	14575
042	0005	0178	3155		2525	14526
040	0007	0064	3205		2572	14482
039	0010	0006	3256		2616	14463
037	0015	-0006	3308		2658	14466
036	0020	-0003	3308		2658	14468
034	0030	-0017	3317		2666	14465
032	0050	-0022	3325		2673	14467
030	0060	-0025	3344		2688	14470

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0386 C	2951 E		2346	14589	0000	00000	4432
0010	0006	3256		2616	14463	0032	00001	1865
0020	-0003	3308		2658	14468	0048	00003	1463
0030	-0017	3317		2666	14465	0063	00007	1388
0050	-0022	3325		2673	14467	0090	00018	1324

C-REF-NO 363	YR 1962	DEPTH 60	WAVES 1	AIR T	VIS
CONS. NO 005	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 74-360N	DAY 25	NO.DPTH 10	WND-DIR	WW-CODE	
LON 94-130W	HR 02.6	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
043	0000	0250				
042	0001	0235	2999	976	2397	14530
040	0003	0150	3136	1117	2512	14511
039	0005	0135	3170	1100	2540	14509
037	0007	0078	3199	1060	2566	14488
035	0010	0039	3248	1001	2608	14477
033	0015	0032	3248	969	2608	14475
031	0020	0009	3256	889	2616	14466
029	0030	-0009	3273	849	2630	14462
026	0050	-0031	3273	818	2631	14455

C-REF-NO 363	YR 1962	DEPTH 55	WAVES 1	AIR T 06.0	VIS
UN. NO 006	MONTH 8	MXSAMPD 00	WAVES 2	WET-B	STN 001
LAT 74-360N	DAY 07	NO.DPTH 9	WNL-DIR 090	WW-CODE	
LON 94-130W	HR 01.1	W-COLOR	WND-FCE 02	CLD-TPE 0	
MARSD SQ 262		W-TRNSP	BARO	CLD-APT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
026	0001	0441	2989	841	2372	14618
024	0003	0425	3004	860	2385	14613
023	0005	0376	3015	893	2398	14594
021	0007	0369	3018	901	2401	14592
019	0010	0314	3041	927	2424	14572
017	0015	0187	3118	1007	2495	14527
015	0020	0057	3260	975	2616	14489
013	0030	0000	3291	869	2644	14469
011	0050	-0028	3317	788	2666	14463

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0457 D	2979 B		2362	14623	0000	00000	4282
0010	0314	3041		2424	14572	0040	00002	3690
0020	0057	3260		2616	14489	0068	00006	1859
0030	0000	3291		2644	14469	0085	00010	1594
0050	-0028	3317		2666	14463	0115	00022	1383

C-REF-NO 363	YR 1962	DEPTH 41	WAVES 1	AIR T 06.0	VIS
CONS. NO 007	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 74-360N	DAY 14	NO.DPTH 9	WND-DIR 360	WW-CODE	
LON 94-130W	HR 18.3	W-COLOR	WND-FCE 05	CLD-TPE 3	
MARSD SQ 262		W-TRNSP 08	BARO	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
201	0001	0449	3056	776	2424	14630
199	0003	0438	3053	784	2422	14625
194	0005	0428	3058	799	2427	14622
193	0007	0400	3073	846	2442	14612
191	0010	0384	3144	801	2500	14616
189	0015	0301	3136	914	2501	14580
187	0020	0186	3191	889	2553	14537
185	0030	0114	3222	887	2583	14511
183	0040	-0054	3291	776	2647	14446

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0450 B	3061 B		2428	14631	0000	00000	3655
0010	0384	3144		2500	14616	0033	00002	2970
0020	0186	3191		2553	14537	0061	00006	2460
0030	0114	3222		2583	14511	0084	00012	2179

C. R. N. 364

Slidre Fjord, Nansen Sound and Strand Fjord, N. W. T.

July 2 - August 16, 1962

by

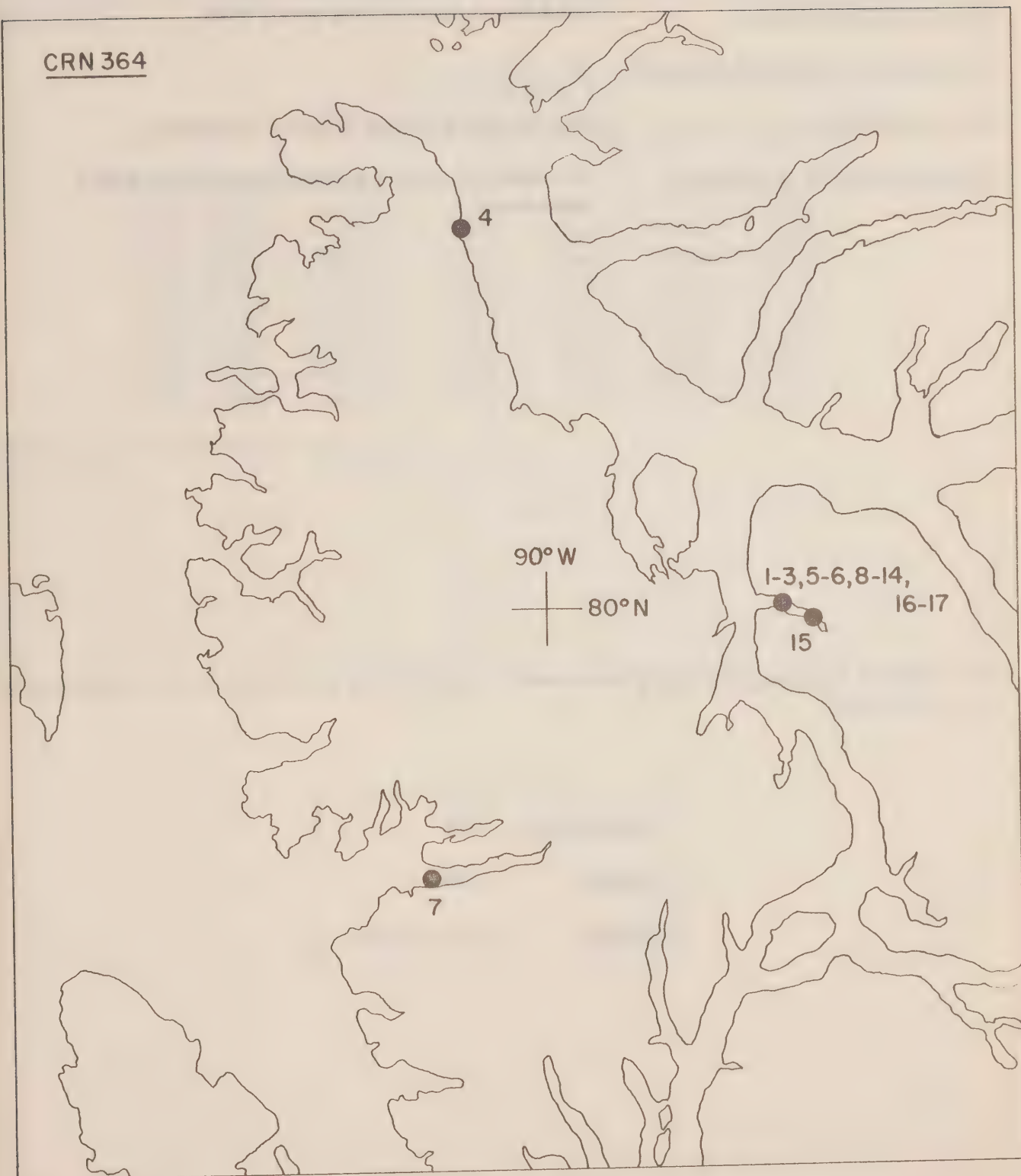
Dr. W. F. Black

Mr. J. Olson

Introduction

One oceanographic station in Slidre Fjord, west Ellesmere Island, was occupied 14 times between 2 July and 16 August, and another also in Slidre Fjord once on 10 August. Two other stations were occupied, in north Nansen Sound and in Strand Fjord, west Axel Heiberg Island, respectively on 11 July and 18 July 1962.

The main purpose of the field work was the carrying out of a biological collecting programme which, in the marine environment, consisted of plankton, benthos, fish and mammal investigations. Physical and chemical observations were made to supplement the biological collecting. The field party was land-based, and marine stations were made from a small, outboard-powered boat. Oceanographic casts were done with a single bottle only.

CRN 364

GENERAL INFORMATION

Institute: Arctic Unit, Montreal.

Observation platform: Land-based party, using small craft.

Total number of stations occupied: 17

Air temperature: Was observed from a fixed thermometer.

Surface sea water temperature: Was obtained from a bucket sample using a deck thermometer.

The following Standard Deviations were used to express both measurement and interpolation error estimates:

<u>Temperature:</u>	0.02
<u>Salinity:</u>	0.04
<u>Oxygen:</u>	Not available

C-REF-NO 364	YR 1962	DEPTH	59	WAVES 1	AIR T	VIS
CONS. NO 001	MONTH 7	MXSAMPD	00	WAVES 2	WET B	STM 001
LAT 80-00 N	DAY 02	NO.DPTH	10	WND-DIR 990	WW-CODE	
LUN 86-00 W	HR 22.3	A-COLOR		WND-FCE 01	CLD-TPE	
MARSD SQ 909		W-TRNSP		BARO	CLD-AMT	C HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
*250	0000	003 8				
*247	0001	0049	0455	1066	0363	14107
*244	0003	-0026	2485	1046	1997	14341
*241	0005	-0069	2786	1045	2240	14363
238	0007	-0101	2882	934	2318	14361
235	0010	-0139	3015	891	2426	14362
232	0015	-0160	3108	1030	2502	14366
229	0020	-0162	3111	947	2504	14366
226	0030	-0163	3147	935	2533	14373
223	0050	-0134	3246	714	2613	14403

MULTIPLE CAST CONTINUED NEXT DAY

C-REF-NO 364	YR 1962	DEPTH 70	WAVES 1	AIR T 06.0	VIS
CONS. NO 002	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 06	NO.DPTH 10	WND-DIR 340	WW-CODE	
LON 86-00 W	HR 15.5	W-COLOR	WND-FCE 01	CLD-TPE 6	
MAKSD SQ 909		W-TRNSP	BARO	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
174	0000	005 B	0448		0357	14107
172	0001	0039	0498	908	0397	14108
170	0003	-0044	2480	1042	1993	14332
168	0005	-0069	2755	1035	2215	14358
166	0007	-0100	2890	1048	2324	14363
164	0010	-0140	3053	988	2457	14367
162	0015	-0155	3106	940	2500	14368
159	0020	-0155	3113	948	2506	14370
157	0030	-0165	3134	897	2523	14370
155	0050	-0114	3320	645	2672	14423

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0050 B	0448		0357	14107	0000	00000	
0010	-0140	3053		2457	14367	0135	00002	3377
0020	-0155	3113		2506	14370	0167	00006	2911
0030	-0165	3134		2523	14370	0195	00014	2746
0050	-0114	3320		2672	14423	0236	00029	1328

C-REF-NO 364	YR 1962	DEPTH 56	WAVES 1	AIR T	VIS
SENS. NO 003	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 09	NO.DPTH 10	WND-DIR 340	WW-CODE	
LON 80-00 W	HR 20.0	W-COLOR	WND-FCE 03	CLD-TPE 8	
MARSD SQ 909		W-TRNSP	BARO	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
214	0000	005 B	0548		0438	14119
213	0001	-0033	1464	954	1175	14200
212	0003	-0038	2651	1018	2130	14358
211	0005	-0074	2873	1039	2310	14372
210	0007	-0114	2984	1079	2401	14369
208	0010	-0140	3089	967	2486	14372
206	0015	-0155	3099	936	2494	14367
204	0020	-0160	3117	894	2509	14368
202	0030	-0160	3134	897	2523	14372
200	0050	-0125	3306	656	2661	14416

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SV
0000	0050 B	0548		0438	14119	0000	00000	
0010	-0140	3089		2486	14372	0130	00002	3100
0020	-0160	3117		2509	14368	0160	00006	2879
0030	-0160	3134		2523	14372	0188	00013	2747
0050	-0125	3306		2661	14416	0230	00029	1432

C-REF-NO 364	YR 1962	DEPTH 29	WAVES 1	AIR T 04.0	VIS
CONS. NO 004	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 002
LAT 81-03 N	DAY 11	NO.DPTH 9	WND-DIR 110	WW-CODE	
LON 91-25 W	HR 06.3	W-COLOR	WND-FCE 01	CLD-TPE 3	
MARSD SQ 910		W-TRNSP	BARO	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
080	0000	031 8				
078	0001	0376		861		
075	0003	-0100	3129	940	2517	14395
073	0005	-0135	3127	940	2517	14379
071	0007	-0149	3134	905	2523	14374
069	0010	-0149	3134	917	2523	14374
067	0015	-0154	3118	894	2510	14370
065	0020	-0161	3134	861	2523	14370
063	0025	-0164	3158	894	2542	14373

C-REF-NO 364	YR 1962	DEPTH 56	WAVES 1	AIR T 12.0	VIS
CONS. NO 005	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 13	NO.DPTH 8	WND-DIR 110	WW-CODE	
LUN 86-00 W	HR 21.3	W-COLOR	WND-FCE 01	CLD-TPE 3	
MARSD SQ 909		W-TRNSP	BARO	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
223	0000	010 B	0566		0454	14146
221	0001	0081	0602	860	0483	14142
219	0003	-0008	2642	1022	2123	14371
217	0005	-0059	2882	1039	2317	14381
216	0007	-0099	3020	1011	2429	14381
215	0010	-0125	3086	980	2483	14379
214	0020	-0155	3111	943	2504	14370
213	0050	-0135	3272	712	2634	14407

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0100 B	0566		0454	14146	0000	00000	
0010	-0125	3086		2483	14379	0129	00002	3126
0020	-0155	3111		2504	14370	0160	00006	2926
0030	-0190 G	3256 I		2622	14375	0183	00012	1800
0050	-0135	3272		2634	14407	0219	00026	1690

C-REF-NO 364	YR 1962	DEPTH 59	WAVES 1	AIR T 08.0	VIS
CONS. NO 006	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 16	NO.DPTH 10	WND-DIR 290	WW-CODE	
LUN 86-00 W	HR 15.3	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 909		W-TRNSP	BARO	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
171	0000	048 B	0888		0709	14362
169	0001	0407	0933	896	0747	14336
168	0003	0146	2421	978	1940	14412
166	0005	-0105	3041	1010	2446	14381
164	0007	-0115	3066	984	2467	14380
162	0010	-0140	3092	964	2488	14372
160	0015	-0155	3117	947	2509	14370
158	0020	-0155	3124	922	2515	14371
156	0030	-0160	3139	871	2527	14373
153	0050	-0110	3336	624	2685	14427

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0480 B	0888		0709	14362	0000	00000	
0010	-0140	3092		2488	14372	0117	00002	3076
0020	-0155	3124		2515	14371	0146	00006	2826
0030	-0160	3139		2527	14373	0174	00013	2709
0050	-0110	3336		2685	14427	0214	00028	1207

C-REF-NO 364	YR 1962	DEPTH 57	WAVES 1	AIR T 08.0	VIS
CONS. NO 007	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 004
LAT 79-10 N	DAY 18	NO.DPTH 10	WND-DIR 240	WW-CODE	
LON 92-00 W	HR 21.2	W-COLOR	WND-FCE 01	CLD-TPE 6	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
228	0000	070 B	0441		0345	14403
226	0001	0642	0468	860	0369	14381
224	0003	0605	0531	870	0421	14373
222	0005	0325	1128	916	0905	14324
220	0007	0087	2996	982	2403	14464
218	0010	0054	3047	992	2446	14457
217	0015	0049	3111	1009	2497	14464
216	0020	-0090	3142	956	2528	14405
214	0030	-0130	3151	933	2536	14389
212	0050	-0120	3215	823	2587	14406

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0700 B	0441		0345	14403	0000	00000	
0010	0054	3047		2446	14457	0136	00002	3484
0020	-0090	3142		2528	14405	0167	00006	2703
0030	-0130	3151		2536	14389	0194	00013	2623
0050	-0120	3215		2587	14406	0242	00032	2132

C-REF-NO 364	YR 1962	DEPTH 59	WAVES 1	AIR T 11.0	VIS
CONS. NO 008	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 21	NO.DPTH 10	WND-DIR 330	WW-CODE	
LDN 86-00 W	HR 20.5	W-COLOR	WND-FCE 01	CLD-TPE 0	
MARSD SQ 909		W-TRNSP	BARO	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
223	0000	085 B	0924		0712	14524
221	0001	0756	1244	840	0971	14525
219	0003	-0059	3013	1032	2423	14398
217	0005	-0089	3051	1006	2454	14390
215	0007	-0120	3091	984	2487	14381
213	0010	-0135	3104	986	2498	14376
211	0015	-0145	3125	1001	2515	14376
209	0020	-0155	3122	978	2513	14371
207	0030	-0160	3139	892	2527	14373
205	0050	-0110	3348	627	2695	14429

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0850 B	0924		0712	14524	0000	00000	
0010	-0135	3104		2498	14376	0116	00002	2985
0020	-0155	3122		2513	14371	0145	00006	2842
0030	-0160	3139		2527	14373	0173	00013	2709
0050	-0110	3348		2695	14429	0212	00027	1115

C-REF-NO 364	YR 1962	DEPTH 66	WAVES 1	AIR T 05.0	VIS
CONS. NO 009	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 25	NO.DPTH 10	WND-DIR 330	WW-CODE	
LON 86-00 W	HR 15.2	W-COLOR	WND-FCE 01	CLD-TPE 4	
MARSD SQ 909		W-TRNSP	BARO	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
153	0000	025 B	1173		0942	14295
168	0001	0336	1196	840	0958	14337
166	0003	0413	2175	967	1730	14498
164	0005	0265	2456	918	1962	14471
162	0007	0008	2963	1058	2380	14423
160	0010	-0100	3108	986	2500	14394
158	0015	-0140	3118	986	2509	14377
156	0020	-0145	3118	986	2509	14375
154	0030	-0150	3142	946	2529	14378
152	0050	-0125		675		

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0250 B	1173		0942	14295	0000	00000	
0010	-0100	3108		2500	14394	0105	00002	2962
0020	-0145	3118		2509	14375	0134	00006	2874
0030	-0150	3142		2529	14378	0162	00013	2688
0050	-0125							

C-REF-NO 364	YR 1962	DEPTH 56	WAVES 1	AIR T 04.0	VIS
CONS. NO 010	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 28	NO.DPTH 10	WND-DIR 270	WW-CODE	
LON 86-00 W	HR 20.3	W-COLOR	WND-FCE 01	CLD-TPE 8	
MARSD SQ 909		W-TRNSP	BARO	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
219	0000	030 B	1327		1064	14338
218	0001	0282	1329	869	1066	14330
217	0003	0287	2386	959	1906	14471
215	0005	0080	2850	1016	2286	14441
213	0007	0075	2869	1013	2302	14441
211	0010	-0061	3066	1025	2465	14406
209	0015	-0130	3125	1005	2515	14383
207	0020	-0145	3125	1008	2515	14376
205	0030	-0160	3144	941	2531	14374
203	0050	-0135	3256	710	2621	14404

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0300 B	1327		1064	14338	0000	00000	
0010	-0061	3066		2465	14406	0100	00002	3296
0020	-0145	3125		2515	14376	0131	00006	2820
0030	-0160	3144		2531	14374	0159	00013	2670
0050	-0135	3256		2621	14404	0204	00031	1813

C-REF-NO 364	YR 1962	DEPTH 56	WAVES 1	AIR T 08.0	VIS
CONS. NO 011	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 31	NO.DPTH 10	WND-DIR 090	WW-CODE	
LON 86-00 W	HR 06.2	W-COLOR	WND-FCE 02	CLD-TPE 7	
MARSD SQ 909		W-TRNSP	BARO	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
080	0000	025 B	1120		0900	14288
078	0001	0335	1329	865	1064	14354
076	0003	0264	1333	865	1069	14323
074	0005	0080	1552	894	1247	14266
072	0007	-0018	1696	909	1362	14239
070	0010	0090	2463	943	1976	14393
068	0015	0055	2980	1005	2392	14449
066	0020	-0100	3073	985	2472	14390
064	0030	-0187	3118	1002	2510	14357
062	0050	-0125	3303	683	2659	14416

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0250 B	1120		0900	14288	0000	00000	
0010	0090	2463		1976	14393	0131	00004	7977
0020	-0100	3073		2472	14390	0188	00011	3230
0030	-0187	3118		2510	14357	0218	00019	2866
0050	-0125	3303		2659	14416	0262	00035	1455

C-REF-NO 364	YR 1962	DEPTH 51	WAVES 1	AIR T 09.0	VIS
CONS. NO 012	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 04	NO.DPTH 10	WND-DIR 210	WW-CODE	
LON 86-00 W	HR 00.3	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SW 909		W-TRNSP	BARO	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
019	0000	028 B	1763		1411	14385
018	0001	0267	1794	891	1436	14384
017	0003	0152	1996	921	1601	14358
015	0005	0103	2086	985	1674	14348
013	0007	0060	2876	996	2308	14435
011	0010	-0008	3015	1008	2422	14424
009	0015	-0113	3111	1005	2503	14389
007	0020	-0112	3118	1013	2509	14391
005	0030	-0155	3142	906	2529	14376
003	0050	-0132	3282	689	2642	14409

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0280 B	1763		1411	14385	0000	00000	13444
0010	-0008	3015		2422	14424	0086	00002	3704
0020	-0112	3118		2509	14391	0119	00007	2882
0030	-0155	3142		2529	14376	0147	00014	2687
0050	-0132	3282		2642	14409	0190	00030	1614

C-REF-NO 364 YR 1962 DEPTH 63 WAVES 1 AIR T 11.0 VIS
 CONS. NO 013 MONTH 8 MXSAMPD 00 WAVES 2 WET B STN 001
 LAT 80-00 N DAY 06 NO.DPTH 10 WND-DIR 030 WW-CODE
 LON 86-00 W HR 15.2 W-COLOR WND-FCE 02 CLD-TPE
 MARSD SQ 909 W-TRNSP BARO CLD-AMT 0 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
167	0000	060 B	1811		1429	14531
166	0001	0590	1836	812	1450	14530
165	0003	0084	2883	985	2313	14447
164	0005	0039	3004	982	2412	14443
162	0007	-0039	3054	996	2455	14414
160	0010	-0102	3101	999	2495	14392
158	0015	-0130	3118	993	2509	14382
156	0020	-0135	3127	973	2517	14381
154	0030	-0155	3136	895	2524	14375
152	0050	-0120	3325	657	2676	14421

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0600 B	1811		1429	14531	0000	00000	13268
0010	-0102	3101		2495	14392	0081	00002	3016
0020	-0135	3127		2517	14381	0111	00006	2807
0030	-0155	3136		2524	14375	0139	00013	2733
0050	-0120	3325		2676	14421	0179	00028	1288

C-REF-NO 364	YR 1962	DEPTH 66	WAVES 1	AIR T 07.0	VIS
CONS. NO 014	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 10	NO.DPTH 10	WND-DIR 250	WW-CODE	
LON 86-00 W	HR 01.3	W-COLOR	WND-FCE 02	CLD-TPE 0	
MARSD SQ 909		W-TRNSP	BARO	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
029	0000	038 B	2318		1846	14502
028	0001	0376	2346	841	1868	14504
027	0003	0280	2353	858	1880	14463
025	0005	0256	2370	861	1895	14455
023	0007	0152	2814	953	2254	14469
021	0010	-0034	3056	1002	2456	14417
019	0015	-0120		989		
017	0020	-0130	3136	985	2524	14385
015	0030	-0150	3141	918	2528	14378
013	0050	-0135	3265	708	2628	14406

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0380 B	2318		1846	14502	0000	00000	9235
0010	-0034	3056		2456	14417	0063	00002	3381
0020	-0130	3136		2524	14385	0094	00006	2739
0030	-0150	3141		2528	14378	0121	00013	2695
0050	-0135	3265		2628	14406	0166	00031	1744

C-REF-NO 364	YR 1962	DEPTH 48	WAVES 1	AIR T 10.0	VIS
CONS. NO 015	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 011
LAT 79-55 N	DAY 11	NO.DPTH 6	WND-DIR 300	WW-CODE	
LON 85-20 W	HR 00.9	W-COLOR	WND-FCE 01	CLD-TPE 3	
MARSD SQ 261		W-TRNSP	BARO	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
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020	0000	095	B			
018	0001	0764		780		
016	0005	0366		869		
014	0010	-0060		984		
012	0020	-0145		943		
009	0047	-0125		696		

C-REF-NO 364	YR 1962	DEPTH 69	WAVES 1	AIR T 08.0	VIS
CONS. NO 016	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 80-00 N	DAY 13	NO.DPTH 10	WND-DIR 300	WW-CODE	
LON 86-00 W	HR 22.5	W-COLOR	WND-FCE 01	CLD-TPE 3	
MARSD SQ 909		W-TRNSP	BARO	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
#246	0000	045 B	1997		1587	14491
#244	0001	0426	1976	824	1572	14478
#242	0003	0438	1987	824	1580	14485
#240	0005	0413	2022	824	1609	14479
238	0007	0433	2134	834	1696	14502
236	0010	0144	2692	938	2157	14449
233	0015	-0079	3101	1013	2494	14403
230	0020	-0107	3118	1002	2509	14393
228	0030	-0135	3120	988	2511	14382
225	0050	-0140	3239	767	2607	14400

#MULTIPLE CAST CONTINUED NEXT DAY

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0450 B	1997		1587	14491	0000	00000	11734
0010	0144	2692		2157	14449	0090	00003	6241
0020	-0107	3118		2509	14393	0136	00009	2883
0030	-0135	3120		2511	14382	0165	00017	2860
0050	-0140	3239		2607	14400	0213	00036	1942

C-REF-NO 364 YR 1962 DEPTH 50 WAVES 1 AIR T 03.0 VIS
 CONS. NO 017 MONTH 8 MXSAMPD 00 WAVES 2 WET B STN 001
 LAT 80-00 N DAY 16 NO.DPTH 9 WND-DIR 110 WW-CODE
 LON 86-00 W HR 18.0 W-COLOR WND-FCE 02 CLD-TPE 6
 MARSD SQ 909 W-TRNSP BARO CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
192	0000	020 B	1941		1555	14372
191	0003	0198		833		
190	0005			864		
189	0007	0140	2454	885	1967	14415
188	0010	-0008		992		
186	0015	-0104	3098	1006	2492	14391
184	0020	-0125	3115	1003	2507	14384
182	0030	-0140	3149	966	2534	14384
180	0048	-0140	3199	802	2575	14394

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0200 B	1941		1555	14372	0000	00000	12040
0010	-0008	2736 H		2198	14385	0089	00003	5844
0020	-0125	3115		2507	14384	0133	00009	2902
0030	-0140	3149		2534	14384	0161	00016	2636

C.R.N. 365

M'Clure Strait and Prince of Wales Strait, N.W.T.

July 25 - August 6, 1962

by

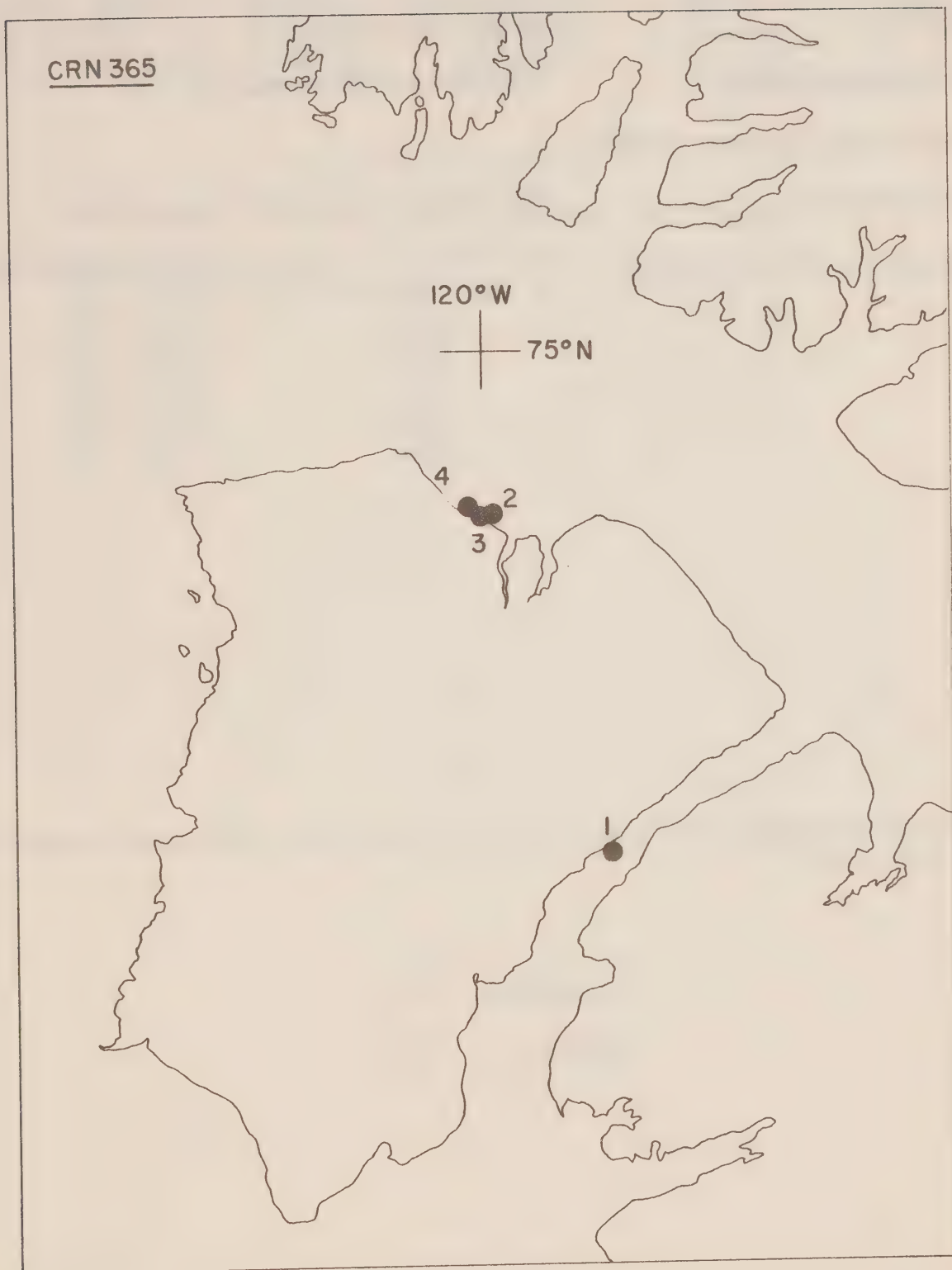
Mr. J.D. McEachern

Mr. D. Gill

Introduction

Four oceanographic stations were occupied in Prince of Wales Strait and in M'Clure Strait, off north Banks Island, between 25 July and 6 August 1963.

The main purpose of the field work was the carrying out of a biological collecting programme which, in the marine environment, consisted of plankton, benthos, fish and mammal investigations. Physical and chemical observations were made to supplement the biological collecting. The field party was land-based, and marine stations were made from a small, outboard-powered boat. Oceanographic casts were done with a single bottle only.



GENERAL INFORMATION

Institute: Arctic Unit, Montreal.

Observation platform: Land-based party, using small craft.

Total number of stations occupied: 4

Air temperature: Was observed from a fixed thermometer.

Surface sea water temperature: Was obtained using a reversing thermometer giving in-situ temperatures to 1/100°C.

The following Standard Deviations were used to express both measurement and interpolation error estimates:

<u>Temperature:</u>	0.02
<u>Salinity:</u>	0.04

C-REF-NO 365	YR 1962	DEPTH		WAVES 1	AIR T 02.0	VIS
CONS. NO 001	MONTH 7	MXSAMPD	00	WAVES 2	WET B	STN 100
LAT 72-53 N	DAY 25	NO.DPTH	8	WND-DIR	WW-CODE	
LDN 118-01 W	HR X12.0	W-COLOR		WND-SPD	CLD-TPE	
MARSD SQ 264		W-TRNSP		BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
120	0000	-0025				
120	0001		2529			
120	0003		2586			
120	0005		2647			
120	0007		2729			
120	0010		2731			
120	0015		3082			
120	0020		3004			

C-REF-NO 365	YR 1962	DEPTH		WAVES 1	AIR T	VIS
CONS. NO 002	MONTH 8	MXSAMPD	00	WAVES 2	WET B	STN 013
LAT 74-20 N	DAY 02	NO.DPTH	9	WND-DIR	WW-CODE	
LON 119-46 W	HR X12.0	W-COLOR		WND-SPD	CLD-TPE	
MARSD SQ 264		W-TRNSP		BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
120	0000	-0094	2571		2067	14320
120	0001	-0092	2569		2065	14321
120	0003	-0079	2595		2086	14331
120	0005	-0084	2606		2095	14331
120	0007	-0064	2635		2118	14344
120	0010	-0027	2734		2197	14376
120	0015	-0026	3058		2458	14422
120	0020	-0072	3108		2500	14408
120	0040	-0123	3186		2564	14399

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0094	2571		2067	14320	0000	00000	7107
0010	-0027	2734		2197	14376	0065	00003	5858
0020	-0072	3108		2500	14408	0109	00009	2969
0030	-0084	3346 I		2692	14438	0130	00014	1141

C-REF-NO 365	YR 1962	DEPTH	WAVES 1	AIR T 03.0	VIS
CONS. NO 003	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 017
LAT 74-17 N	DAY 05	NO.DPTH 10	WND-DIR	WW-CODE	
LON 120-00 W	HR X12.0	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 265		W-TRNSP	BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
120	0000	0031	2586		2077	14381
120	0001	0109	2626		2106	14423
120	0003	0030	2738		2199	14402
120	0005	-0023	3082		2477	14425
120	0007	-0028	3075		2472	14422
120	0010	-0046	3082		2478	14415
120	0015	-0053	3099		2492	14415
120	0020	-0048	3103		2495	14419
120	0030	-0063	3118		2507	14416
120	0050	-0099	3168		2549	14409

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0031	2586		2077	14381	0000	00000	7014
0010	-0046	3082		2478	14415	0051	00002	3177
0020	-0048	3103		2495	14419	0082	00006	3015
0030	-0063	3118		2507	14416	0112	00014	2894
0050	-0099	3168		2549	14409	0166	00036	2498

C-REF-NO 365	YR 1962	DEPTH		WAVES 1	AIR T 04.0	VIS
CONS. NO 004	MONTH 8	MXSAMPD	00	WAVES 2	WET B	STN 018
LAT 74-21 N	DAY 06	NO.DPTH	10	WND-DIR	WW-CODE	
LON 120-25 W	HR X12.0	W-COLOR		WND-SPD	CLD-TPE	
MARSD SQ 265		W-TRNSP		BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
120	0000	0065	2560		2055	14393
120	0001	0065	2649		2126	14406
120	0003	0032	2821		2265	14414
120	0005	0026	2868		2303	14418
120	0007	0026	2885		2317	14421
120	0010	-0069	3096		2490	14406
120	0015	-0079	3130		2518	14407
120	0020	-0074	3118		2508	14409
120	0030	-0094	3153		2537	14406
120	0050	-0115	3180		2559	14403

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0065	2560		2055	14393	0000	00000	7224
0010	-0069	3096		2490	14406	0052	00002	3063
0020	-0074	3118		2508	14409	0082	00006	2892
0030	-0094	3153		2537	14406	0109	00013	2617
0050	-0115	3180		2559	14403	0160	00034	2402

C.R.N. 366

Creswell Bay, N.W.T.

June 23 - August 13, 1962

by

Dr. L. Johnson

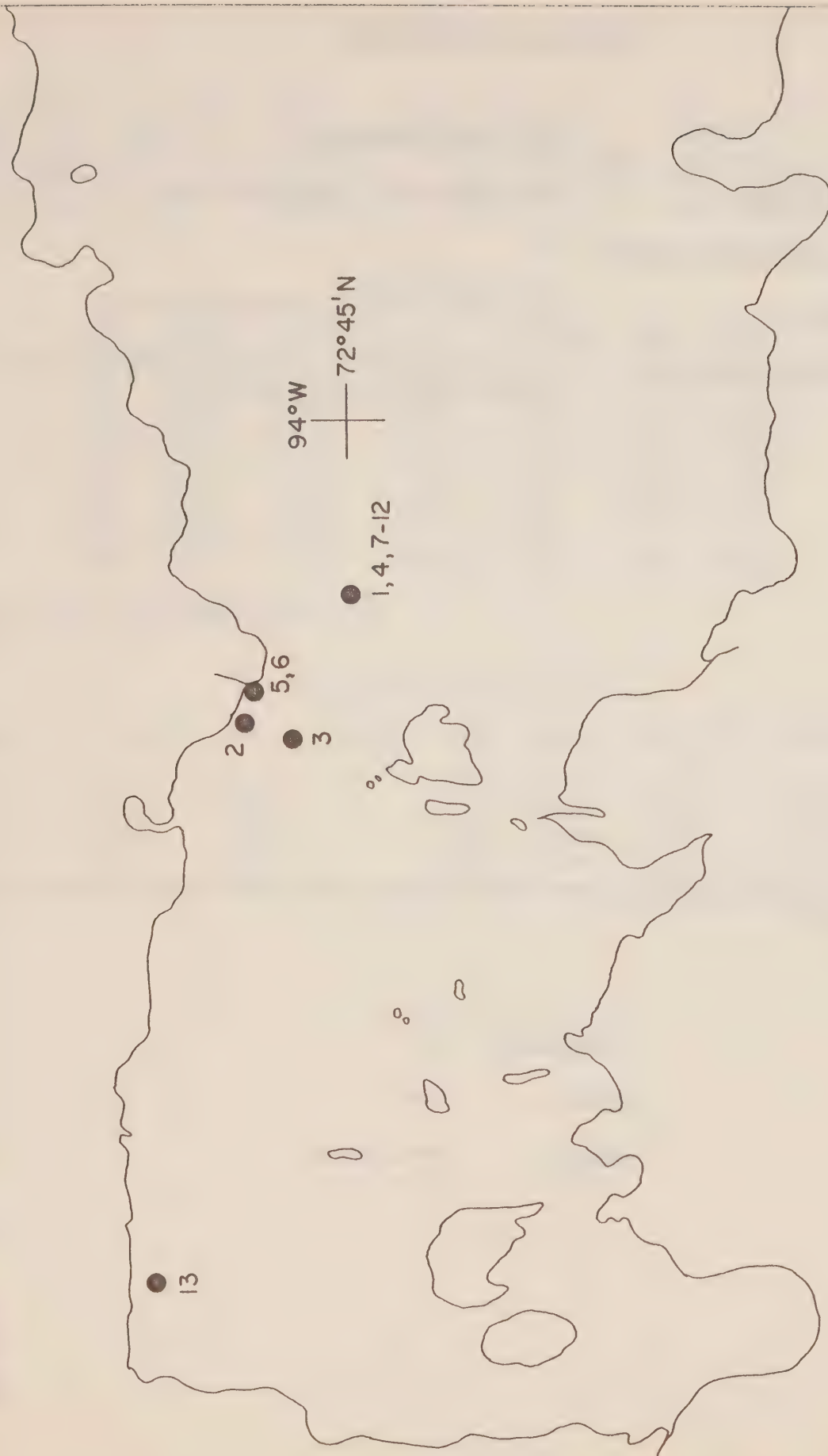
Mr. J. Wiebe

Introduction

Four oceanographic stations in Creswell Bay, Somerset Island, were occupied a total of 13 times between 23 June and 13 August 1962.

The main purpose of the field work was the carrying out of a biological collecting programme which, in the marine environment, consisted of plankton, benthos, fish and mammal investigations. Physical and chemical observations were made to supplement the biological collecting. The field party was land-based, and marine stations were made from a small, outboard-powered boat. Oceanographic casts were done with a single bottle only.

CRN 366



GENERAL INFORMATION

Institute: Arctic Unit, Montreal.

Observation platform: Land-based party, using small craft.

Total number of stations occupied: 13

Air temperature: Was observed from a fixed thermometer.

Surface sea water temperature: Was obtained using a reversing thermometer giving in-situ temperatures to $1/100^{\circ}\text{C}$.

The following Standard Deviations were used to express both measurement and interpolation error estimates:

<u>Temperature:</u>	0.02
<u>Salinity:</u>	0.04
<u>Oxygen:</u>	Not available

C-REF-NO 366	YR 1962	DEPTH 34	WAVES 1	AIR T 07.5	VIS
CONS. NO 001	MONTH 6	MXSAMPD 00	WAVES 2	WET B	STN 002
LAT 72-450N	DAY 23	NO.DPTH 8	WND-DIR 360	WW-CODE	
LON 94-040W	HR 23.0	W-COLOR	WND-SPD 06	CLD-TPE 0	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
230	0000	0007	0349	1048	0275	14073
237	0003	-0135	1899	926	1524	14209
238	0005	-0135	3015	810	2426	14363
*240	0007	-0170	3246	781	2614	14379
*242	0010	-0169	3256	781	2622	14382
*243	0015	-0167	3253	784	2619	14383
*247	0020	-0167		775		
*248	0033	-0169	3273	763	2635	14388

*MULTIPLE CAST CONTINUED NEXT DAY

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0007	0349		0275	14073	0000	00000	
0010	-0169	3256		2622	14382	0131	00001	1809
0020	-0167	3267 B		2631	14386	0149	00004	1722
0030	-0168	3273		2635	14388	0166	00008	1676

C-REF-NO 366	YR 1962	DEPTH 10	WAVES 1	AIR T	VIS
CONS. NO 002	MONTH 6	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 72-455N	DAY 25	NO.DPTH 3	WND-DIR	WW-CODE	
LON 94-060W	HR 19.5	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
195	0000	0007				
198	0004	-0152	3139		2527	14372
200	0008	-0158	2873		2311	14333

C-REF-NO 366	YR 1962	DEPTH 35	WAVES 1	AIR T 08.5	VIS
CONS. NO 003	MONTH 6	MXSAMPD 00	WAVES 2	WET B	STN 003
LAT 72-453N	DAY 27	NO.DPTH 9	WND-DIR 340	WW-CODE	
LON 94-060W	HR 22.8	W-COLOR	WND-SPD 04	CLD-TPE 8	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
228	0000	0022		1021		
230	0003	-0082	1038	1038	0829	14120
232	0005	-0155	2117	927	1700	14229
234	0007	-0158	2599	804	2090	14295
235	0010	-0156	2966	812	2387	14347
237	0015	-0164	3091	780	2488	14362
*248	0020	-0165	3132	780	2521	14368
*253	0030	-0173	3256	739	2622	14383
*255	0034	-0172	3282	757	2643	14388

*MULTIPLE CAST CONTINUED NEXT DAY

C-REF-NO 366	YR 1962	DEPTH 34	WAVES 1	AIR T 07.0	VIS
CONS. NO 004	MONTH 6	MXSAMPD 00	WAVES 2	WET B	STN 002
LAT 72-450N	DAY 30	NO.DPTH 8	WND-DIR 270	WW-CODE	
LON 94-040W	HR 17.8	W-COLOR	WND-SPD 05	CLD-TPE 6	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
178	0000	0083		913		
180	0003	-0079	2438	902	1960	14310
181	0005	-0144	3108	800	2501	14372
182	0007	-0158	3148	777	2534	14371
184	0010	-0164	3256	761	2622	14384
185	0015	-0164	3229	749	2600	14381
186	0020	-0163	3241	743	2609	14384
188	0033	-0169	3263	743	2627	14386

C-REF-NO 368	YR 1962	DEPTH 44	WAVES 1	AIR T 18.8	VIS
CONS. NO 005	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 008
LAT 72-455N	DAY 03	NO.DPTH 2	WND-DIR 130	WW-CODE	
LON 94-045W	HR 18.5	W-COLOR	WND-SPD 04	CLD-TPE 8	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
190	0030	-0171	3273	723	2636	14386
185	0043	-0167	3256	745	2622	14388

C-REF-NO 366	YR 1962	DEPTH 41	WAVES 1	AIR T 05.6	VIS
CONS. NO 006	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 008
LAT 72-455N	DAY 06	NO.DPTH 9	WND-DIR 270	WW-CODE	
LON 94-055W	HR 22.1	W-COLOR	WND-SPD 03	CLD-TPE 8	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
221	0000					
221	0003		1465			
222	0005		2117			
222	0007		3049			
223	0010		3049			
223	0015		3174			
224	0020		3232			
225	0030		3256			
225	0040		3223			

C-REF-NO 366	YR 1962	DEPTH 34	WAVES 1	AIR T 09.8	VIS
CONS. NO 007	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 002
LAT 72-450N	DAY 07	NO.DPTH 9	WND-DIR C90	WW-CODE	
LON 94-040W	HR 18.8	W-COLOR	WND-SPD 01	CLD-TPE 8	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 2	HW

OBSERVED

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND
202	0000	0037	0232		0182	14072
200	0002	0033	0308		0243	14081
198	0003	-0034	2918		2345	14397
197	0005	-0124	3042		2448	14372
195	0007	-0141	3118		2509	14375
193	0010	-0155	3177		2557	14377
191	0015	-0157	3205		2580	14381
189	0020	-0164	3246		2614	14384
188	0032	-0165	3253		2619	14387

INTERPOLATED

DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0037	0232		0182	14072	0000	00000	
0010	-0155	3177		2557	14377	0139	00001	2419
0020	-0164	3246		2614	14384	0161	00004	1886
0030	-0165	3254		2620	14387	0179	00009	1820

C-REF-NO 366	YR 1962	DEPTH 34	WAVES 1	AIR T 06.6	VIS
CONS. NO C08	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 002
LAT 72-450N	DAY 14	NO.DPTH 9	WND-DIR 090	WW-CODE	
LON 94-040W	HR 21.5	W-COLOR	WND-SPD 02	CLD-TPE 8	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
215	0000	0043		873		
217	0001	0009		923		
218	0003	-0072	2807	1030	2257	14364
219	0005	-0108	2985	989	2401	14372
221	0007	-0103	3053	1025	2456	14384
222	0010	-0141	3136	957	2524	14378
224	0015	-0144	3187	889	2565	14385
225	0020	-0154	3211	804	2585	14384
228	0032	-0166	3187	787	2566	14377

C-REF-NO 366	YR 1962	DEPTH 46	WAVES 1	AIR T 18.3	VIS
CONS. NO 009	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 002
LAT 72-450N	DAY 21	NO.DPTH 10	WND-DIR 270	WW-CODE	
LON 94-040W	HR 18.8	W-COLOR	WND-SPD 02	CLD-TPE 8	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
188	0000	0057		871		
189	0001	0041		871		
191	0003	0028	2836	1010	2277	14414
193	0005	-0042	2966	988	2384	14400
195	0007	-0129	2145	856	1723	14246
197	0010	-0137	3030	840	2438	14365
200	0015	-0144	3077	834	2476	14369
201	0020	-0141	3130	719	2519	14379
203	0030	-0161	3237		2606	14386
205	0045	-0165	3261	532	2626	14390

C-REF-NO 366	YR 1962	DEPTH 46	WAVES 1	AIR T 08.9	VIS
CONS. NO 010	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 002
LAT 72-450N	DAY 29	NO.DPTH 11	WND-DIR 090	WW-CODE	
LON 94-040W	HR 00.3	W-COLOR	WND-SPD 04	CLD-TPE 6	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
023	0000	0341	2040	858	1628	14449
021	0001	0237	2675	853	2138	14487
019	0003	0222	2848	872	2277	14504
017	0005	0168	2890	886	2314	14486
015	0007	-0008	2963	943	2381	14416
013	0010	-0058	3027	968	2434	14402
011	0015	-0095	3082	923	2479	14393
009	0020	-0129	3141	855	2528	14386
007	0030	-0157	3220	733	2592	14386
005	0040	-0160	3229	717	2600	14387
003	0045	-0161	3229	717	2600	14387

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0341	2040		1628	14449	0000	00000	11339
0010	-0058	3027		2434	14402	0075	00002	3596
0020	-0129	3141		2528	14386	0106	00006	2701
0030	-0157	3220		2592	14386	0130	00012	2086

C-REF-NO 366	YR 1962	DEPTH 41	WAVES 1 00X0	AIR T 11.1	VIS
CONS. NO 011	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 002
LAT 72-450N	DAY 04	NO.DPTH 10	WND-DIR CALM	WW-CODE	
LON 94-040W	HR 16.3	W-COLOR	WND-SPD 00	CLD-TPE 0	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
182	0000	0318	2717	887	2166	14528
181	0001	0286	2828	884	2257	14529
179	0003	0254	2916	902	2329	14527
177	0005	0299	2932	886	2339	14550
175	0007	0243	2956	883	2362	14529
173	0010	0198	3015	882	2412	14517
171	0015	0123	3047	902	2442	14489
168	0020	0010	3013	918	2420	14433
166	0030	-0129	3177	860	2557	14393
163	0040	-0145	3210	804	2584	14392

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0318	2717		2166	14528	0000	00000	6152
0010	0198	3015		2412	14517	0050	00002	3806
0020	0010	3013		2420	14433	0088	00008	3725
0030	-0129	3177		2557	14393	0119	00015	2423

C-REF-NO 366	YR 1962	DEPTH 31	WAVES 1	AIR T 07.2	VIS
CONS. NO 012	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 002
LAT 72-450N	DAY 11	NO.DPTH 9	WND-DIR 360	WW-CODE	
LON 94-040W	HR 17.4	W-COLOR	WND-SPD 03	CLD-TPE 6	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
190	0000	0409	2838	846	2255	14584
188	0001	0406	2838	840	2255	14583
186	0003	0377	2916	856	2320	14581
184	0005	0337	2990	887	2382	14574
182	0007	0291	3013	890	2404	14557
180	0010	0263	3027	887	2417	14547
178	0015	0213	3047	906	2436	14529
176	0020	0217	3077	931	2460	14536
174	0030	-0099	3172	851	2552	14406

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0409	2838		2255	14584	0000	00000	5304
0010	0263	3027		2417	14547	0045	00002	3758
0020	0217	3077		2460	14536	0081	00007	3346
0030	-0099	3172		2552	14406	0110	00015	2469

C-REF-NO 366	YR 1962	DEPTH 62	WAVES 1	AIR T 06.7	VIS
CONS. NO 013	MONTH 8	MXSAMPD 01	WAVES 2	WET B	STN 032
LAT 72-460N	DAY 13	NO.DPTH 1	WND-DIR 270	WW-CODE	
LUN 94-170W	HR 19.5	W-COLOR	WND-SPD 06	CLD-TPE 6	
MARSD SQ 262		W-TRNSP	BARO	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
195	0061	-0165	3272	606	2635	14394

C.R.N. 367

Wellington Bay and Cambridge Bay, N.W.T.

August 27 - September 7, 1962

by

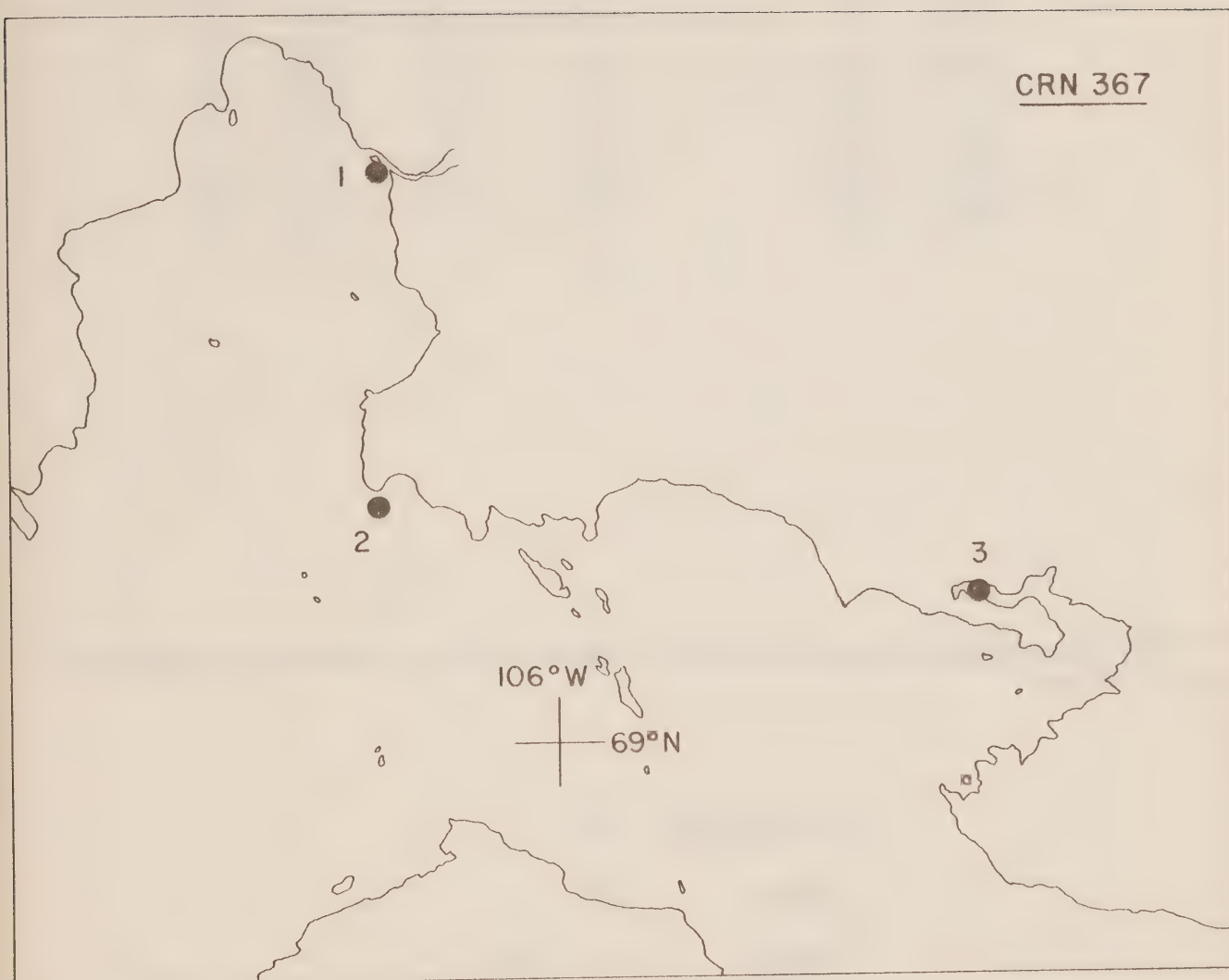
Mr. B. Beck

Mr. J. Olson

Introduction

One oceanographic station was occupied on 9 August in Wellington Bay, one on 27 August just outside Wellington Bay and a third on 7 September 1962 in Cambridge Bay, on the south coast of Vistoria Island.

The main purpose of the field work was the carrying out of a biological collecting programme which, in the marine environment, consisted of plankton, benthos, fish and mammal investigations. Physical and chemical observations were made to supplement the biological collecting. The field party was land-based, and marine stations were made from a small, outboard-powered boat. Oceanographic casts were done with a single bottle only.

CRN 367

GENERAL INFORMATION

Institute: Arctic Unit, Montreal.

Observation platform: Land-based party, using small craft.

Total number of stations occupied: 3

Surface sea water temperature: Was obtained using a reversing thermometer giving in-situ temperatures to 1/100° C.

The following Standard Deviations were used to express both measurement and interpolation error estimates:

<u>Temperature:</u>	0.02
<u>Salinity:</u>	0.04
<u>Oxygen:</u>	Not available

C-REF-NO 367	YR 1962	DEPTH 25	WAVES 1	AIR T	VIS
CONS. NO 001	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 015
LAT 69-243N	DAY 09	NO.DPTH 8	WND-DIR	WW-CODE	
LON 106-195W	HR X12.0	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 227		W-TRNSP	BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
120	0001	0599	2306		1818	14594
120	0003	0531				
120	0005	0378	2531		2014	14530
120	0007	0281	2823		2253	14527
120	0010	0125	2592		2078	14427
120	0015	0039	2823		2266	14420
120	0020	0012	2886		2318	14417
120	0023	-0054	2824		2270	14378

C-REF-NO 367	YR 1962	DEPTH		WAVES 1	AIR T	VIS
CONS. NO 002	MONTH 8	MXSAMPD	CO	WAVES 2	WET B	STN 309
LAT 69-100N	DAY 27	NO.DPTH	10	WND-DIR	WW-CODE	
LON 106-200W	HR 23.4	W-COLOR		WND-SPD	CLD-TPE	
MARSD SQ 227		W-TRNSP		BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
239	0000					
#249	0001	0716	2330		1824	14645
#247	0003	0678	2332		1830	14630
#245	0005	0670	2698		2118	14675
#244	0007	0617	2377		1872	14612
#241	0010	0574	2386		1883	14596
#240	0015	0506	2485		1968	14581
238	0020	0328	2672		2130	14530
236	0030	0144	2951		2364	14488
234	0038	0004	2809		2256	14405

#MULTIPLE CAST CONTINUED NEXT DAY

C-REF-NO 367	YR 1962	DEPTH 50	WAVES 1	AIR T	VIS
CONS. NO 003	MONTH 9	MXSAMPD 00	WAVES 2	WET B	STN 080
LAT 69-070N	DAY 07	NO.DPTH 10	WND-DIR	WW-CODE	
LON 105-100W	HR X12.0	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 227		W-TRNSP	BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
120	0000	0363	2738		2180	14551
120	0001	0271	2738		2186	14511
120	0003	0271	2729		2179	14510
120	0005	0271	2736		2185	14511
120	0007	0269	2727		2178	14509
120	0010	0218	2738		2190	14489
120	0015	0115	2816		2258	14454
120	0020	0076	2876	967	2307	14445
120	0030	-0052	2883		2318	14388
120	0049	-0059	2902	549	2333	14391

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0363	2738		2180	14551	0000	00000	6026
0010	0218	2738		2190	14489	0060	00003	5928
0020	0076	2876		2307	14445	0114	00011	4801
0030	-0052	2883		2318	14388	0161	00023	4702
0050	-0057 B	2897		2329	14391	0255	00061	4591

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No. 5
1963 Data Record Series
CAPE PARRY AREA
N. W. T.

Canadian Oceanographic Data Centre

Programmed by the Canadian Committee on Oceanography

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CANADIAN OCEANOGRAPHIC DATA CENTRE

No. 5

1963 DATA RECORD SERIES

Cape Parry area, N.W.T.

(C.R.N. 377)

FISHERIES RESEARCH BOARD OF CANADA

Cape Parry area, N.W.T.

Ship:	M. V. "Salvelinus"
Local Cruise designation:	Salvelinus 1962
Cruise period:	July 16 - August 29, 1962
Observers:	Mr. D. Patriquin Mr. I. G. Gidney Mr. G. Harding

SECTION I

Description of data collection procedures

"SALVELINUS"



Fisheries Research Board

CRN 377



INTRODUCTION

Fourteen oceanographic stations were occupied by the M.V. Salvelinus between 16 July and 29 August 1962 in the waters from Liverpool Bay east to Darnley Bay, N.W.T.

The main purpose of the field investigations was the carrying out of a biological collecting programme consisting of fishing and the collecting of marine invertebrates. Physical and chemical observations were made primarily to supplement biological collecting.

SECTION II

Description of the machine-generated data record

INTRODUCTION (Section II)

The following section is devoted to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms are transferred to punch cards for subsequent electronic data processing.

The data are processed on an IBM 1620 computer using the OCEANS II program (Sauer, C.D. and Fofonoff, N.P., 1963).

Besides computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and interpolation at Standard Oceanographic Depths.

After the data have been processed, the data-record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous duplimat masters. The duplimat masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a Standard Deviation (σ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "General Information" of Section II of the Data Record.

The measurement error estimate of a specific observation is stated as a multiple of the standard deviation derived as above and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, i.e., $1\sigma = A$, $2\sigma = B$, etc. (In the data record $1\sigma (A)$ is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray. A parabola is fitted through 3 values of a given variable (T, S, O₂) considered as a function of depth. The two interpolation parabolas require a total of 4 points (observed depths). The middle points are common to both parabolas. The average of the 2 values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement under normal routine field conditions (σ) by:

$$\frac{\sigma_i}{\sigma} = \left\{ \left(\frac{\Delta V_i}{\sigma^2} \right)^2 + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left(\frac{\sigma_n}{\sigma} \right)^2 \right\}^{\frac{1}{2}}, \text{ where}$$

σ_i = Standard deviation of the combined error estimates at standard oceanographic depth.

$$\Delta V_i = \frac{1}{3} (V_{i,1} - V_{i,2}),$$

the interpolation error estimate of variable "V" at standard oceanographic depth.

γ = Interpolation polynomial coefficient.

Z_j = Observed depth.

Z_i = Standard oceanographic depth, such that: $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of this fraction $\frac{\sigma_i}{\sigma}$ is reported in the Data Record, e.g.: 2 = B, 3 = C, etc.

With respect to the interpolated value of the Salinity variable if reported to three decimal digits, the "interpolation error estimate" is given only when $\frac{\sigma_i}{\sigma} \geq 2$. If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE
NUMBER:

Assigned by the Institute. Starts off with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE
NUMBER:

Indicates the chronological order in which the stations were observed.

(3) LATITUDE:

Latitude and longitude give the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE:

Designates the geographic area code (see marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR:

The time (Greenwich Mean Time) at which the environmental surface observations were made.

It is reported to tenths of hours.

If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH

The sounding: The measured distance (by any method) from surface to bottom, corrected and reported in meters.

- (11) MAXIMUM
SAMPLING DEPTH: A code to indicate the deepest sampling depth.
00 m - 50 m = 00
51 m - 150 m = 01
151 m - 250 m = 02
etc.
- (12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).
- (13) WATER COLOUR: A code based on the percentage of yellow (see table 2).
- (14) WATER
TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage; the General Information Chapter in Section II of the data record will state which method was used.
- (15) WAVES 1
($D_w D_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (16) WAVES 2
($D_w D_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system.
(See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:- wind variable or direction unknown.
- (18) WIND FORCE
(WND-FCE): Beaufort Notation (See Table 6).
WIND SPEED
(WND-SPD): Anemometer reading in metres per second.
- (19) BAROMETER: The barometric pressure expressed in millibars: the General Information Chapter in Section II of the data record will state the type of instrument, and whether corrections have been applied.
- (20) AIR TEMPERATURE: To 1/10 of a degree Centigrade.

- (21) WET BULB: To 1/10 of a degree Centigrade.
- (22) WW CODE: Present Weather Code (See Table 7).
Ref: WMO Code 4677.
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8).
Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9).
Ref: WMO Code 2700.
- (25) VISIBILITY: Visibility at the surface (See Table 10).
Ref: WMO Code 4300.
- (26) STATION: A strictly local station reference number, usually assigned prior to carrying out a cruise.
- (27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

OBSERVED DATA HEADINGS

(1) GMT (2) DEPTH (3) TEMP (4) SAL (5) OXYGEN (6) SGMT
(7) SOUND (8) PO₄ (9) -P- (10) NO₂ (11) NO₃ (12) SiO₃ (13) pH.

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical observations were collected during the cruise.

(1) G. M. T. The Greenwich Mean Time of in-situ thermometer inversion and sea water sample collection.

When a multiple cast was initiated before and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement:
"MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH:

The depth in meters is computed from the meter wheel reading, the wire angle, and the corrected unprotected thermometer reading at the moment the oceanographic bottle reversed.

Alphabetical characters "B" to "I", (if present), immediately to the right of this column, are measurement error estimates (see: "Introduction" to Section II of the data record).

(3) TEMPERATURE:

In-situ temperatures from deepsea reversing thermometers graduated in 0.1°C . intervals, and read to 0.01°C . Surface temperature collection procedures as indicated in the chapter "Observation Procedures" of Section I, and/or under "General Information" of Section II.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(4) SALINITY:

Salinity as defined by:
 $S = 0.03 + 1.805 \text{ Cl } \%$

- a. 1/100 parts per 1000, or
- b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (2).

In case b: no error estimate indication is provided for, but the additional decimal digit takes its place.

(5) OXYGEN:

The concentration of dissolved oxygen as expressed in millilitres per litre to 2 decimal places.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(6) SIGMA-T:

The density as defined by $\sigma_t = (\text{Specific gravity} - 1) \times 1000$, and expressed in milligrams per cm^3 i. e., Sigma-T reported as 2456 reads $24.56 \text{ milligrams/cm}^3$ and corresponds to a specific gravity of 1.02456

- (7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula, expressed in terms of temperature, salinity and total pressure.
- (8) PO_4 Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre
- (9) -P- Total Phosphorus reported to hundredths of microgram-atoms per litre
- (10) NO_2 Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre -No dissolved nitrogen included-
- (11) NO_3 Nitrate-Nitrogen reported to tenths of microgram-atoms per litre
- (12) SiO_3 Silicate-Silicon reported in whole microgram-atoms per litre
- (13) pH The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

INTERPOLATED DATA HEADINGS

(1) DEPTH (2) TEMP (3) SAL (4) OXYGEN (5) SGMT (6) SOUND (7) DELTA-D (8) POT-EN (9) SV A.
--

- (1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

- (2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).
- (3) SALINITY
- A. The reported salinity values are observed to three decimal places.
- (i) the interpolation error estimate is less than twice the standard deviation of measurement
- the interpolated value is reported to three decimal places (e. g., 30.139).
- (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.
- the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e. g., 29.23C).
- B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.
- the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e. g., 30.59B).
- (4) OXYGEN: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).
- (5) SIGMA-T: Computed from Temperature and Salinity values at standard oceanographic depth, and expressed in mgms/cm³ (e. g., 23.19).
- (6) SOUND VELOCITY: Computed from temperature and salinity values at standard oceanographic depth, and expressed in tenths of metres per second (e. g., 1462.3 m/sec).

(7) DELTA-D:

The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P [\alpha(T, S, P) - \alpha_{35, 0, P}] dP$$

ΔD is expressed in dynamic metres (10^5 ergs/gram) and recorded to three decimal places (e. g., 2.345 dyn. metres).

(8) POTENTIAL
ENERGY
ANOMALY:The Potential energy anomaly χ as defined by:

$$\chi = 1/g \int_0^P \rho \delta dP = \int_0^Z \rho \delta dz$$

χ is expressed in units of 10^8 ergs/cm² and recorded to two decimal places (e. g., 116.44).

(9) SPECIFIC
VOLUME
ANOMALY:

The specific volume anomaly as defined by:

$$\delta = \alpha - \alpha_{35, 0, P}$$

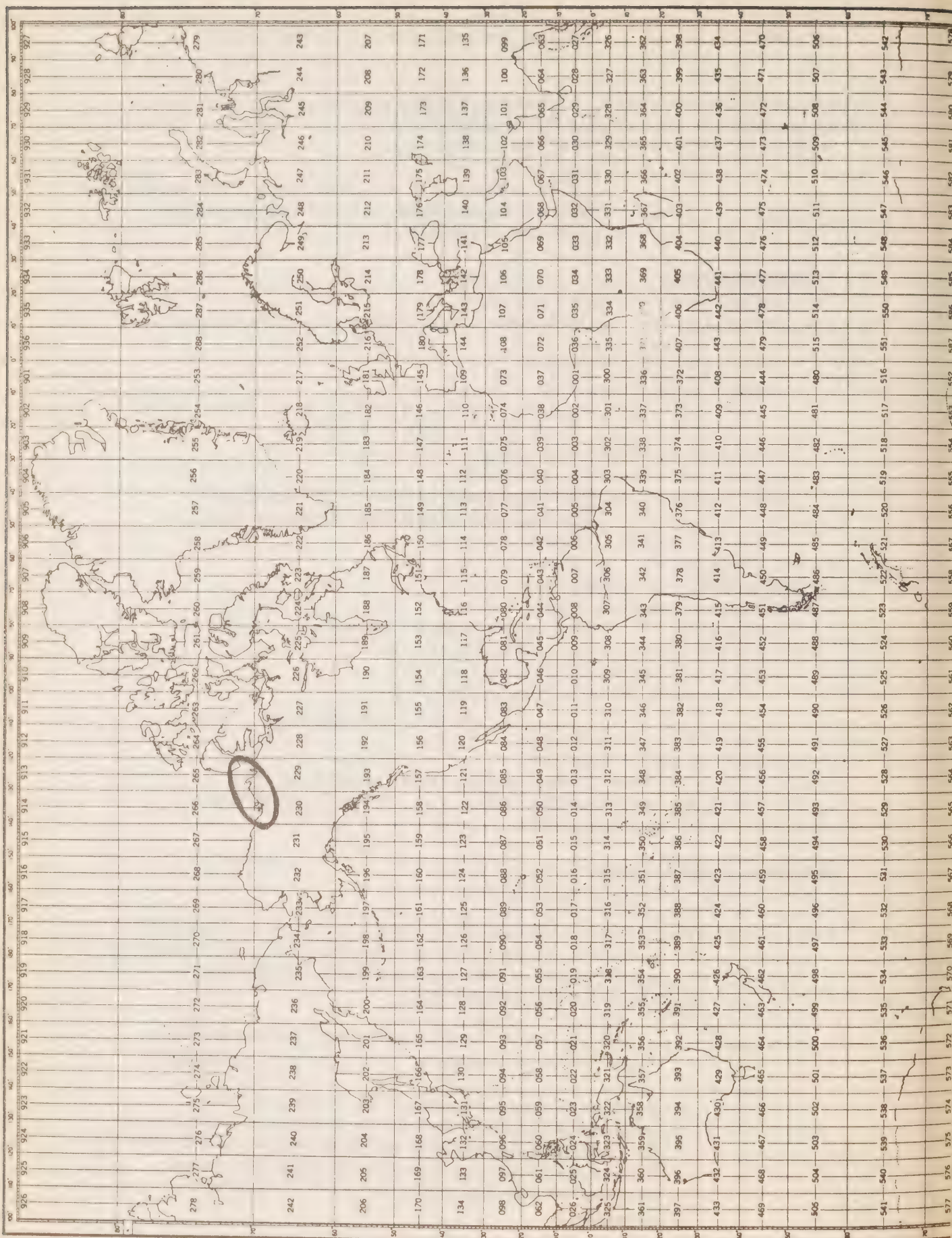
δ is conventionally reported as $10^5 \delta$, and recorded to one decimal place (e. g., 0.001234 is recorded as 123.4).

SPECIAL CHARACTERS

† (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side refers to the appropriate level.

* (Asterisk) : to the left of the "Interpolated Data" marks standard depth levels according to the following specifications:

If three or more standard depth levels fall within an observed depth interval, the third and all consequent levels within that interval are preceded by an asterisk to indicate that more than two interpolations were carried out utilizing the same set of interpolation parabolas.



Marsden Square Chart

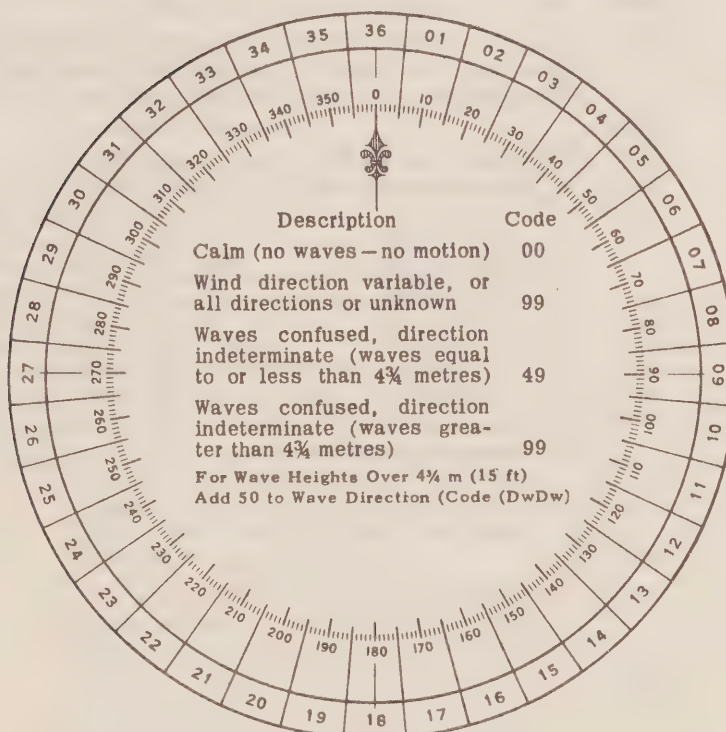
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (P_w)
(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (H_w)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than ¼ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	½ m (1½ ft)		1 5½ m (17½ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	1½ m (5 ft)		3 6½ m (21 ft)
4	2 m (6½ ft)		4 7 m (22½ ft)
5	2½ m (8 ft)		5 7½ m (24 ft)
6	3 m (9½ ft)		6 8 m (25½ ft)
7	3½ m (11 ft)		7 8½ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	4½ m (14 ft)		9 9½ m (30½ ft) or more
x	Height not determined		

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure ww			
No meteors except photometeors	00	Cloud development not observed or not observable	characteristic change of the state of sky during the past hour
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
Haze, dust, sand or smoke	03	Clouds generally forming or developing	
	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes	
	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	
	11	Patches of	shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
	12	More or less continuous	
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precepitation at the time of observation	
	18	Squalls	} at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel clouds	
ww = 20 - 29			
	20	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	
	21	Drizzle (not freezing) or snow grains	} not falling as shower(s)
	22	Rain (not freezing)	
	23	Snow	
	24	Rain and snow or ice pellets, type (a)	
	25	Freezing drizzle or freezing rain	
	26	Shower(s) of rain	
	27	Shower(s) of snow, or of rain and snow	
	28	Shower(s) of hail, or of rain and hail	
	29	Fog or ice fog	
ww = 30 - 39			
	30	Duststorm, sandstorm, drifting or blowing snow	
	31	Slight or moderate duststorm or sandstorm	} - has decreased during the preceding hour - no appreciable change during the preceding hour - has begun or has increased during the preceding hour
	32		
	33		
	34	Severe duststorm or sandstorm	} - has decreased during the preceding hour - no appreciable change during the preceding hour - has begun or has increased during the preceding hour
	35		
	36	Slight or moderate blowing snow	} generally low (below eye level)
	37	Heavy drifting snow	
	38	Slight or moderate blowing snow	} generally high (above eye level)
	39	Heavy blowing snow	
ww = 40 - 49			
	40	Fog or ice fog at the time of observation	
	41	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
	42	Fog or ice fog in patches	
	43	Fog or ice fog, sky visible	} has become thinner during the preceding hour
	44	Fog or ice fog, sky invisible	
	45	Fog or ice fog, sky visible	} no appreciable change during the preceding hour
	46	Fog or ice fog, sky invisible	
	47	Fog or ice fog, sky visible	} has begun or has become thicker during the preceding hour
	48	Fog or ice fog, sky invisible	
	49	Fog, depositing rime, sky visible	
		Fog, depositing rime, sky invisible	

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

50	Drizzle, not freezing, intermittent	{	slight at time of observation
51	Drizzle, not freezing, continuous		
52	Drizzle, not freezing, intermittent	{	moderate at time of observation
53	Drizzle, not freezing, continuous		
54	Drizzle, not freezing, intermittent	{	heavy (dense) at time of observation
55	Drizzle, not freezing, continuous		
56	Drizzle, freezing, slight		
57	Drizzle, freezing, moderate or heavy (dense)		
58	Drizzle and rain, slight		
59	Drizzle and rain, moderate or heavy		

ww = 60 - 69 Rain

60	Rain, not freezing, intermittent	{	slight at time of observation
61	Rain, not freezing, continuous		
62	Rain, not freezing, intermittent	{	moderate at time of observation
63	Rain, not freezing, continuous		
64	Rain, not freezing, intermittent	{	heavy at time of observation
65	Rain, not freezing, continuous		
66	Rain, freezing, slight		
67	Rain, freezing, moderate or heavy		
68	Rain or drizzle and snow, slight		
69	Rain or drizzle and snow, moderate or heavy		

70 - 79 Solid precipitation not in showers

ww			
70	Intermittent fall of snow flakes	{	slight at time of observation
71	Continuous fall of snow flakes		
72	Intermittent fall of snow flakes	{	moderate at time of observation
73	Continuous fall of snow flakes		
74	Intermittent fall of snow flakes	{	heavy at time of observation
75	Continuous fall of snow flakes		
76	Ice prisms (with or without fog)		
77	Snow grains (with or without fog)		
78	Isolated starlike snow crystals (with or without fog)		
79	Ice pellets, type (a)		

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

80	Rain shower(s), slight		
81	Rain shower(s), moderate or heavy		
82	Rain shower(s), violent		
83	Shower(s) of rain and snow mixed, slight		
84	Shower(s) of rain and snow mixed, moderate or heavy		
85	Snow shower(s), slight		
86	Snow shower(s), moderate or heavy		
87	Shower(s) of snow pellets or ice pellets, type (b), with or without rain	{	- slight
88	or rain and snow mixed		
89	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	{	- moderate or heavy
90			
91	Slight rain at time of observation	{	thunderstorm during the preceding hour but not at time of observation
92	Moderate or heavy rain at time of observation		
93	Slight snow, or rain and snow mixed or hail at time of observation	{	thunderstorm at time of observation
94	Moderate or heavy snow, or rain and snow mixed or hail at time of observation		
95	Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation	{	thunderstorm at time of observation
96	Thunderstorm, slight or moderate, with hail at time of observation		
97	Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation	{	thunderstorm at time of observation
98	Thunderstorm, combined with duststorm or sandstorm at time of observation		
99	Thunderstorm, heavy, with hail at time of observation		

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, dust storm, sand storm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
90	Less than 50 metres (less than 55 yards)
91	50-200 metres (approx. 55-220 yards)
92	200-500 metres (approx. 220-550 yards)
93	500-1,000 metres (approx. 550 yards- $\frac{1}{2}$ n.m.)
94	1-2 km (approx. $\frac{3}{4}$ -1 n.m.)
95	2-4 km (approx. 1-2 n.m.)
96	4-10 km (approx. 2-6 n.m.)
97	10-20 km (approx. 6-12 n.m.)
98	20-50 km (approx. 12-30 n.m.)
99	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

SECTION III

Serial oceanographic data

C-REF-NO 377	YR 1962	DEPTH 16	WAVES 1 04X2	AIR T 12.0	VIS 98
CONS. NO 001	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 001
LAT 69-493N	DAY 16	NO.DPTH 4	WND-DIR 040	WW-CODE 00	
LON 130-190W	HR 03.5	W-COLOR	WND-FCE 03	CLD-TPE	
MARSD SQ 230		W-TRNSP	BARO	CLD-AMT	HW 10

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
035	0000	1253	1228	639	0899	14716
035	0005	0132		703		
035	0010	-0115		470		
035	0015	-0104		293		

C-REF-NO 377	YR 1962	DEPTH 7	WAVES 1 00X0	AIR T 19.9	VIS 98
CONS. NO 002	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 005
LAT 69-370N	DAY 21	NO.DPTH 2	WND-DIR CALM	WW-CODE 03	
LON 130-190W	HR 00.0	W-COLOR	WND-FCE 00	CLD-TPE	
MARSD SQ 230		W-TRNSP	BARO	CLD-AMT 1	HW 10

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
000	0000	1480	1239	599	0871	14798
000	0006		1286	562		

C-REF-NO 377	YR 1962	DEPTH	9	WAVES 1 00X0	AIR T 10.0	VIS
CONS. NO 003	MONTH 7	MXSAMPD	00	WAVES 2	WET B	STN 009
LAT 69-480N	DAY 25	NO.DPTH	3	WND-DIR CALM	WW-CODE 00	
LON 130-130W	HR 06.5	W-COLOR		WND-FCE 00	CLD-TPE	
MARSD SQ 230		W-TRNSP		BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
065	0000	1037	1442	507	1095	14661
065	0003	0994	1425	467	1087	14643
065	0008	0557	1857	458	1469	14520

C-REF-NO 377	YR 1962	DEPTH 12	WAVES 1 00X0	AIR T 14.4	VIS 97
CONS. NO 004	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 012
LAT 69-205N	DAY 31	NO.DPTH 3	WND-DIR CALM	WW-CODE 02	
LON 130-530W	HR 18.5	W-COLOR	WND-FCE 00	CLD-TPE 7	
MARSD SQ 230		W-TRNSP	BARO	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
185	0000	1132		524		
185	0005	1129	1185	504	0884	14666
185	0011	1130	1180	480	0880	14666

C-REF-NO 377	YR 1962	DEPTH 3	WAVES 1 00X0	AIR T 15.6	VIS 97
CONS. NO 005	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 016
LAT 69-450N	DAY 02	NO.DPTH 1	WND-DIR CALM	WW-CODE 02	
LON 130-325W	HR 06.5	W-COLOR	WND-FCE 00	CLD-TPE	
MARSD SQ 230		W-TRNSP	BARO	CLD-AMT 2	HW 1

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
065	0001	0958	1698	687	1303	14662

C-REF-NO 377	YR 1962	DEPTH 12	WAVES 1 01X0	AIR T 16.7	VIS 98
CONS. NO 006	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 020
LAT 69-470N	DAY 05	NO.DPTH 5	WND-DIR 010	WW-CODE	
LON 130-240W	HR 18.5	W-COLOR	WND-FCE 05	CLD-TPE	
MARSD SQ 230		W-TRNSP	BARO	CLD-AMT 2	HW 1

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
185	0000	1039	1265	538	0957	14640
185	0003	1029	1338	509	1015	14646
185	0005	0229	2894	488	2313	14514
185	0007	0146	3130	481	2507	14509
186	0011	-0057	3127	448	2514	14417

C-REF-NO 377	YR 1962	DEPTH 30	WAVES 1 22X0	AIR T 14.6	VIS 98
CONS. NO 007	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 022
LAT 69-250N	DAY 08	NO.DPTH 7	WND-DIR 220	WW-CODE	
LON 132-080W	HR 01.0	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 230		W-TRNSP	BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
010	0000	1451	1150	552	0808	14777
010	0005	1233	1168	543	0856	14702
010	0010	1218	1189	541	0874	14700
012	0015	1172	1221	471	0906	14688
012	0020	1054	1221	504	0921	14644
012	0023	0424	1281	394	1022	14391
012	0027	0210	1301	394	1045	14297

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SYA
0000	1451	1150		0808	14777	0000	00000	9342
0010	1218	1189		0874	14700	0188	00009	8688
0020	1054	1221		0921	14644	0371	00037	8227

C-REF-NO 377	YR 1962	DEPTH	7	WAVES 1		AIR T 12.8	VIS 97
CONS. NO 008	MONTH 8	MXSAMPD	00	WAVES 2		WET B	STN 027
LAT 69-140N	DAY 10	NO.DPTH	2	WND-DIR	200	WW-CODE 02	
LON 132-270W	HR 18.0	W-COLOR		WND-FCE	01	CLD-TPE	
MARSD SQ 230		W-TRNSP		BARO		CLD-AMT 8	HW 2

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
180	0000	1328	0686	611	0471	14680
180	0006	1397	0697	614	0469	14707

C-REF-NO 377	YR 1962	DEPTH 10	WAVES 1 18X0	AIR T 18.5	VIS 98
CONS. NO 009	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 032
LAT 69-480N	DAY 12	NO.DPTH 4	WND-DIR 180	WW-CODE 03	
LON 130-190W	HR 21.5	W-COLOR	WND-FCE 01	CLD-TPE	
MARSD SQ 230		W-TRNSP	BARO	CLD-AMT 1	HW 2

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
215	0000	1337	1327	510	0963	14758
215	0005	1061	1556	506	1180	14685
215	0007	0231	2829	412	2261	14506
215	0009	0221	2810	431	2247	14499

C-REF-NO 377	YR 1962	DEPTH 18	WAVES 1 18X0	AIR T 18.5	VIS 98
CONS. NO 010	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 033
LAT 69-558N	DAY 13	NO.DPTH 4	WND-DIR 180	WW-CODE 03	
LON 129-080W	HR 00.8	W-COLOR	WND-FCE 01	CLD-TPE	
MARSD SQ 229		W-TRNSP	BARO	CLD-AMT 2	HW 6

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
008	0000	1330	1647	613	1210	14793
008	0006	0622	2241	607	1765	14596
008	0008	0128	3089	595	2475	14496
008	0016	0019	3168	542	2544	14458

C-REF-NO 377	YR 1962	DEPTH 6	WAVES 1 18X0	AIR T 19.4	VIS 98
CONS. NO 011	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 034
LAT 70-310N	DAY 15	NO.DPTH 3	WND-DIR 180	WW-CODE 00	
LON 128-190W	HR 22.5	W-COLOR	WND-FCE 02	CLD-TPE	
MARSD SQ 265		W-TRNSP	BARO	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
225	0000	1138	1827	549	1378	14745
225	0003	0753	2243	539	1752	14649
225	0005	0226	3134	534	2505	14545

C-REF-NO 377	YR 1962	DEPTH	7	WAVES 1	04X1	AIR T	12.8	VIS	98
CONS. NO 012	MONTH 8	MXSAMPD	00	WAVES 2		WET B		STN	034
LAT 70-310N	DAY 16	NO.DPTH	3	WND-DIR	040	WW-CODE	03		
LON 128-190W	HR 22.5	W-COLOR		WND-FCE	03	CLD-TPE			
MARSD SQ 265		W-TRNSP		BARO		CLD-AMT	2	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
225	0000	1145	1871	610	1411	14753
225	0004	0978	1927	594	1478	14698
225	0006	0003	3134	570	2518	14444

C-REF-NO 377 YR 1962 DEPTH 110 WAVES 1 00X0 AIR T 21.1 VIS 98
 CONS. NO 013 MONTH 8 MXSAMPD 01 WAVES 2 WET B STN 043
 LAT 70-066N DAY 22 NO.DPTH 7 WND-DIR CALM WW-CODE 00
 LON 125-430W HR 03.5 W-COLOR WND-FCE 00 CLD-TPE
 MARSD SQ 265 W-TRNSP BARO CLD-AMT 0 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
035	0000	0400	3041	677	2417	14607
035	0010	0115	3118	664	2499	14494
035	0020	-0045	3160	743	2541	14428
035	0030	-0114	3184		2562	14401
038	0050	-0122	3237	579	2605	14408
038	0075	-0141	3272	565	2634	14408
038	0100	-0149	3289	545	2648	14411

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0400	3041		2417	14607	0000	00000	3761
0010	0115	3118		2499	14494	0034	00002	2972
0020	-0045	3160		2541	14428	0062	00006	2579
0030	-0114	3184		2562	14401	0087	00012	2373
0050	-0122	3237		2605	14408	0130	00030	1962
0075	-0141	3272		2634	14408	0176	00059	1687
0100	-0149	3289		2648	14411	0217	00095	1553

C-REF-NO 377	YR 1962	DEPTH 1	WAVES 1 00X0	AIR T 13.3	VIS 98
CONS. NO 014	MONTH 8	MXSAMPD CO	WAVES 2	WET B	STN 046
LAT 69-210N	DAY 26	NO.DPTH 1	WND-DIR CALM	WW-CODE 02	
LON 123-420W	HR 04.3	W-COLOR	WND-FCE 00	CLD-TPE	
MARSD SQ 229		W-TRNSP	BARO	CLD-AMT 5	HW 12

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
043	0000	0999	0245	719	0168	14503

C-REF-NO 377	YR 1962	DEPTH 15	WAVES 1 27X1	AIR T 08.3	VIS 97
CONS. NO 015	MONTH 8	MXSAMPD 00	WAVES 2	WET B	STN 049
LAT 70-070N	DAY 29	NO.DPTH 5	WND-DIR 270	WW-CODE 02	
LON 124-390W	HR 18.5	W-COLOR	WND-FCE 05	CLD-TPE	
MARSD SQ 265		W-TRNSP	BARO	CLD-AMT 7	HW 4

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
185	0000	0578	2784	669	2196	14647
185	0005	0577	2797	670	2206	14650
185	0007	0566	2826	671	2230	14649
185	0010	0340	3104		2472	14591
187	0013	0058	3117	640	2502	14469

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North Pacific Ocean

Canadian Oceanographic Data Centre

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No. 6

1963 Data Record Series

Ocean Weather Station "P" North Pacific Ocean

(C O D C Reference: 02-63-003)

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Local Cruise designation: P - 63 - 3

Cruise period: June 25 - August 5, 1963

Observer: Mr. R. G. Tippet

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ERRATA

TO

Publication No. 6, 1963 Data Record Series

P.O.G. Cruise: P-63-3

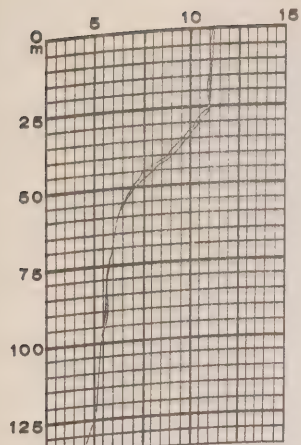
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June 25 - August 5, 1963.

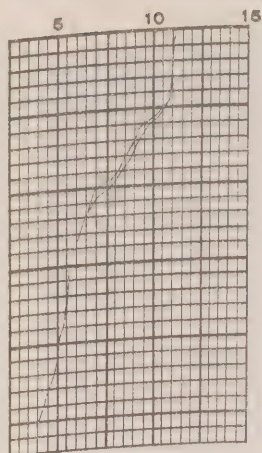
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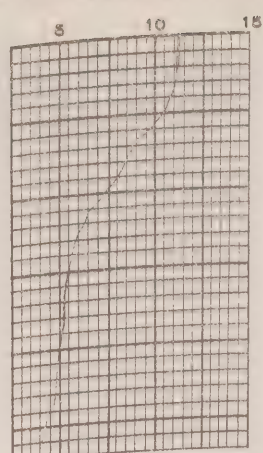
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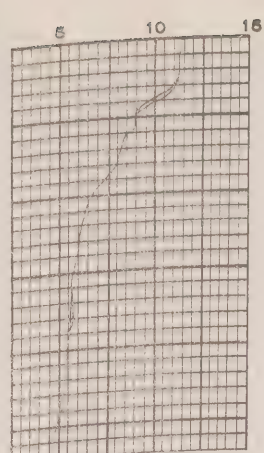
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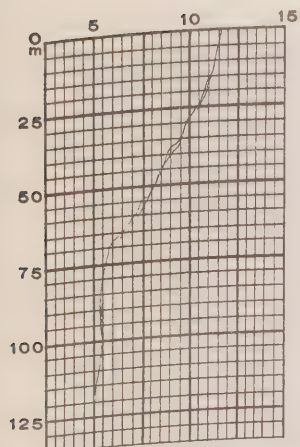
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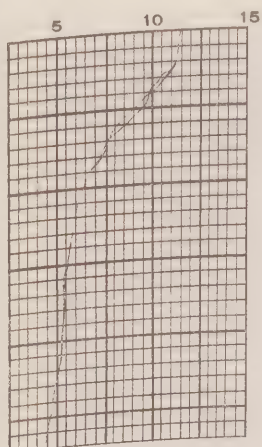
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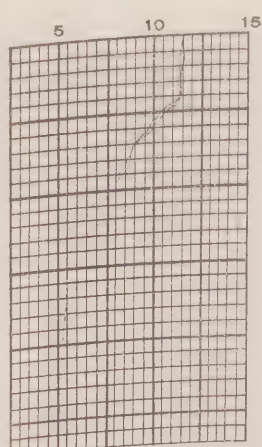
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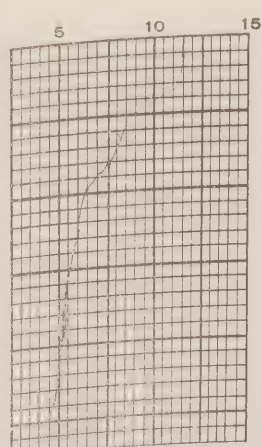
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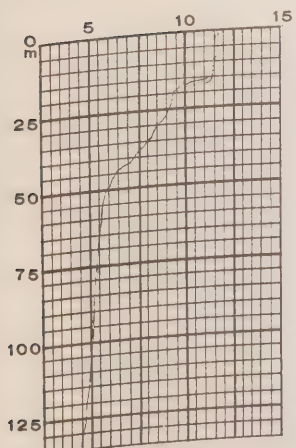
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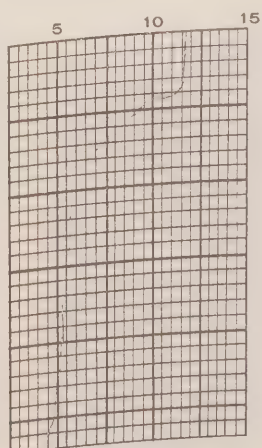
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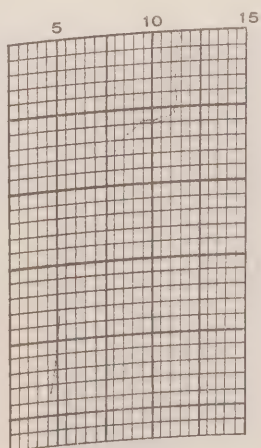
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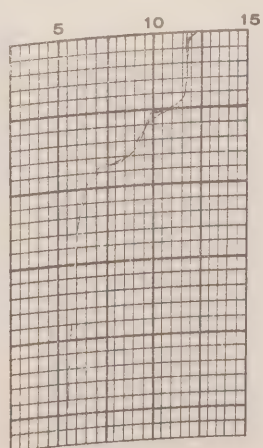
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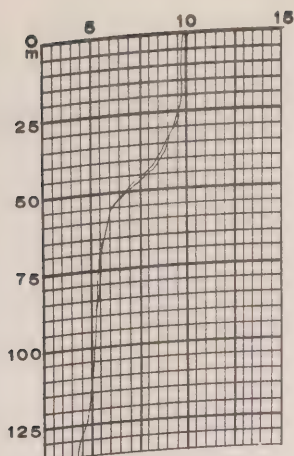


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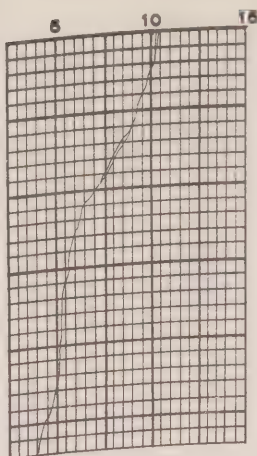


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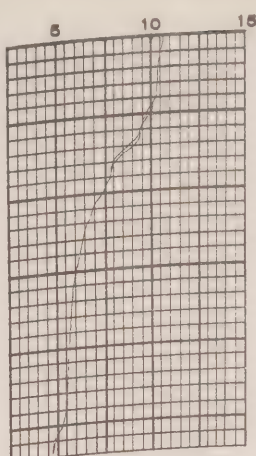
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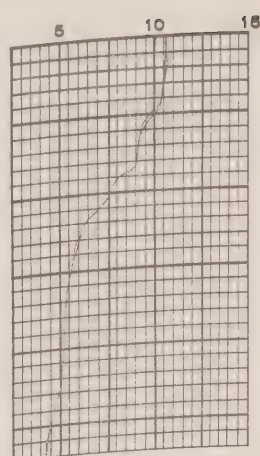
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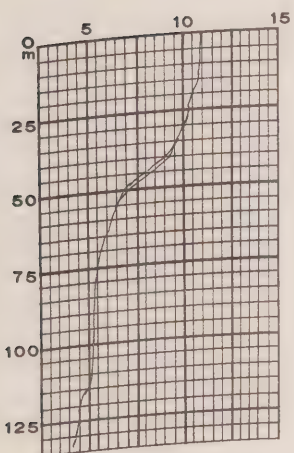
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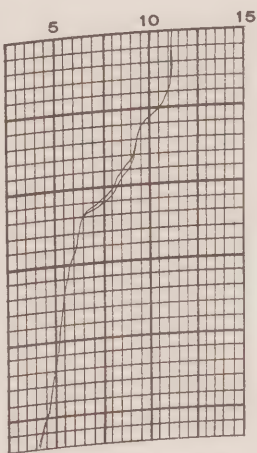
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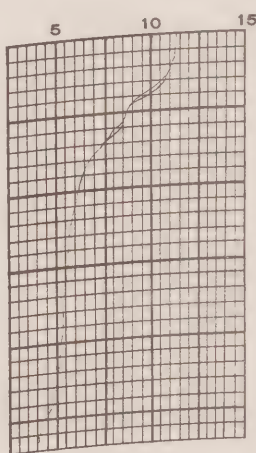
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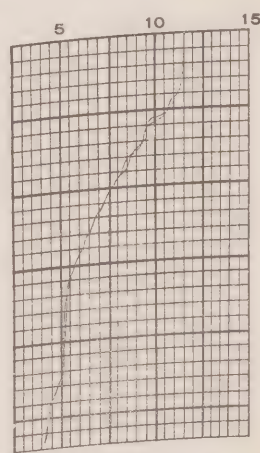
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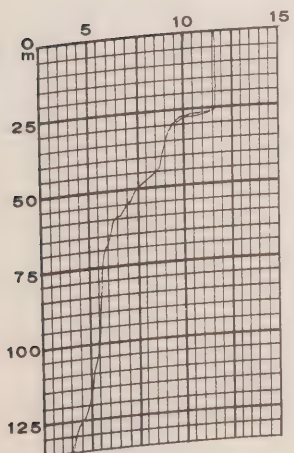
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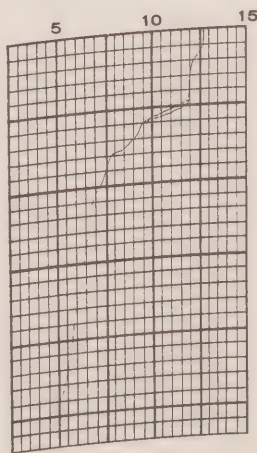
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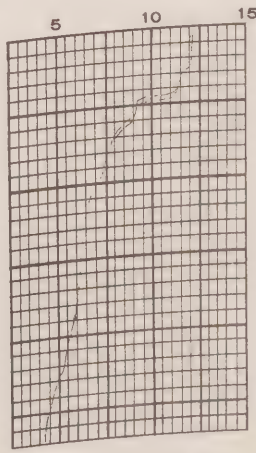
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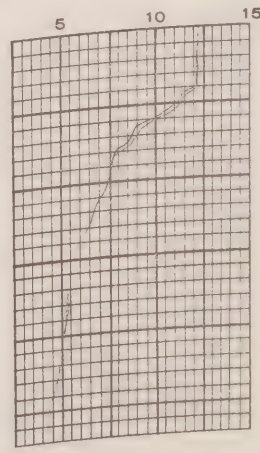
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63/07/24/18.7
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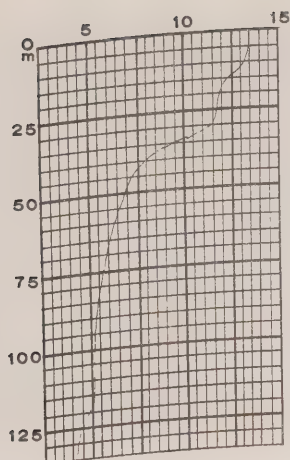


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144° 52' w



63/07/29/18.8
49° 58' n
144° 54' w

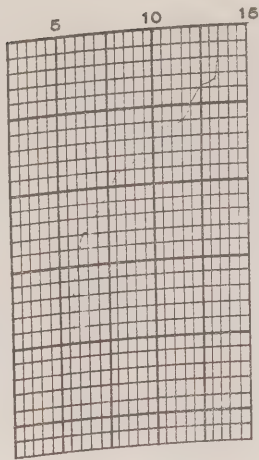
C.C.G.S. "Stonetown", Patrol No. 57



63/08/03/02.0

49° 50' n

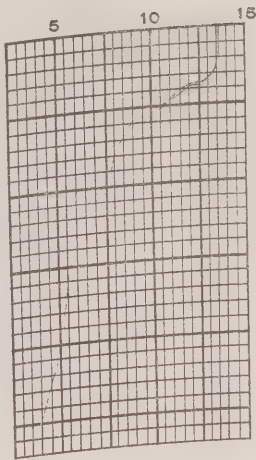
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63/08/04/01.0

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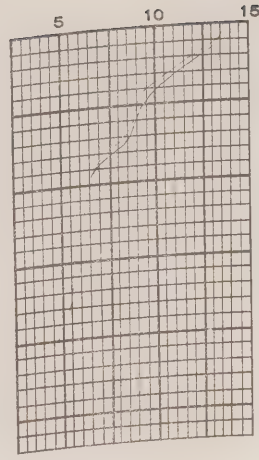
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63/08/05/01.0

50° 03' n

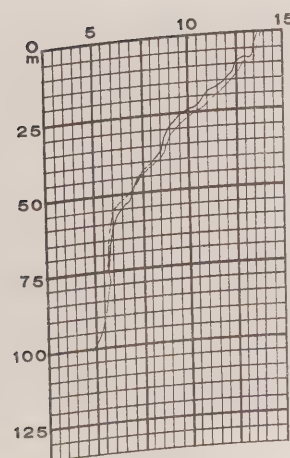
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63/08/06/01.0

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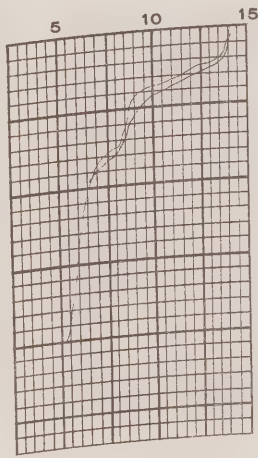
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63/08/07/02.0

50° 01' n

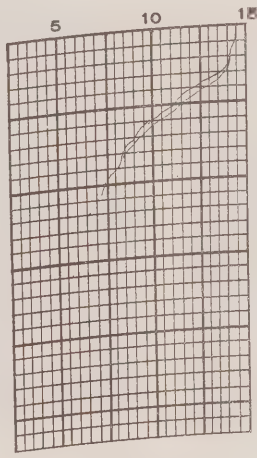
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63/08/08/01.0

50° 00' n

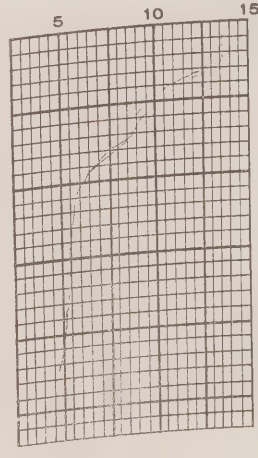
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63/08/09/01.0

50° 10' n

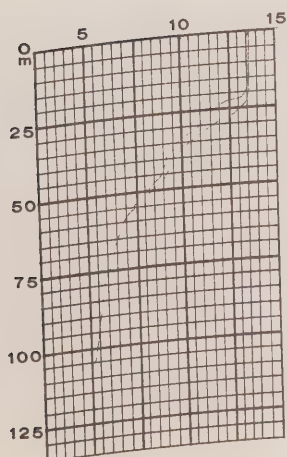
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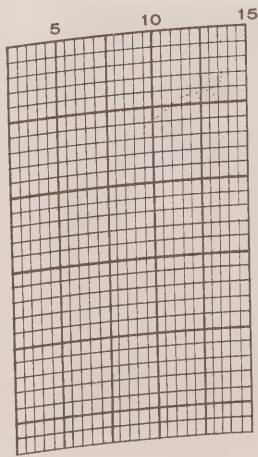
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63/08/11/01.0

50° 00' n

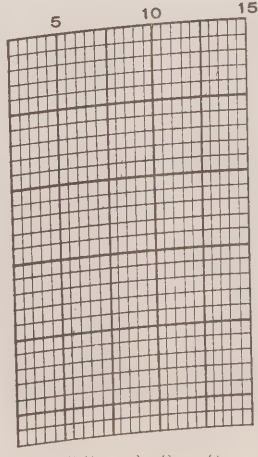
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63/08/12/01.0

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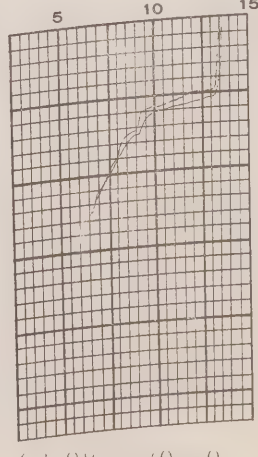
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63/08/13/01.0

49° 58' n

144° 59' w

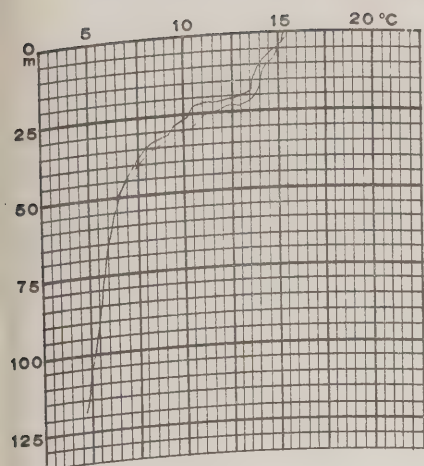


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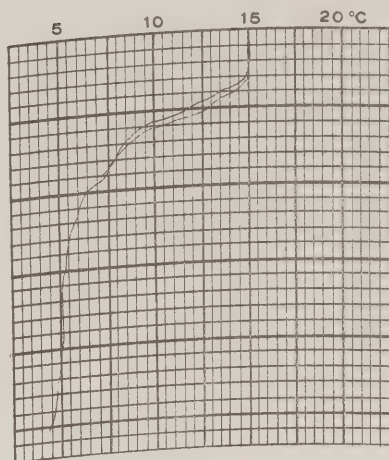
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144° 59' w

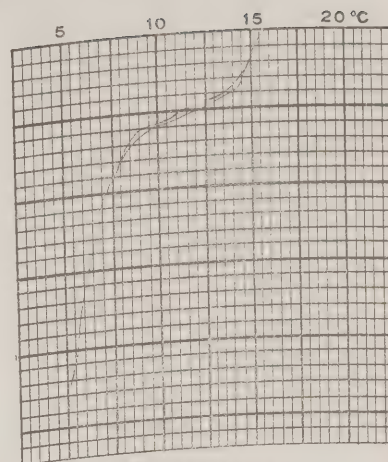
C.C.O.S. "Stonetown", Petrol No. 57



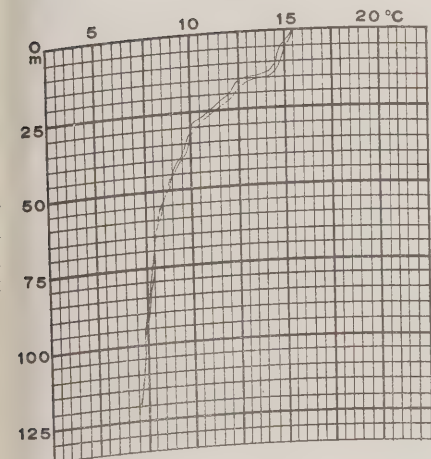
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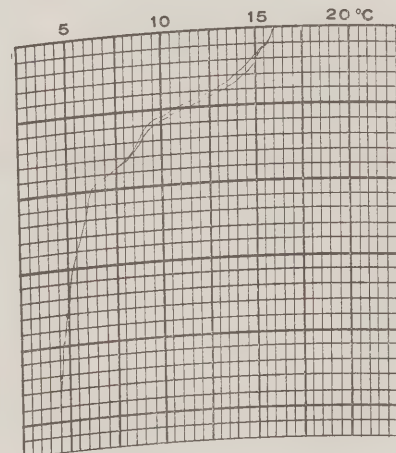
63/08/24/02.0

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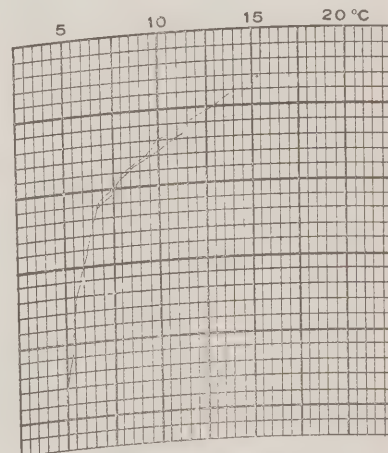
63/08/25/02.0

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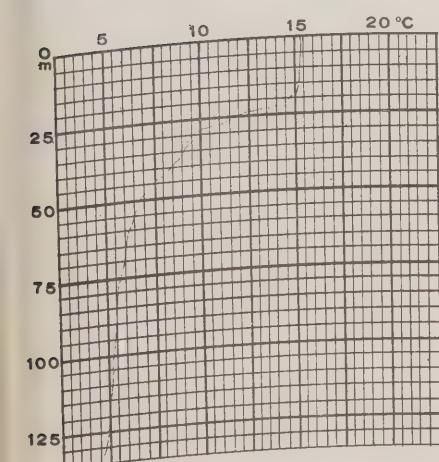
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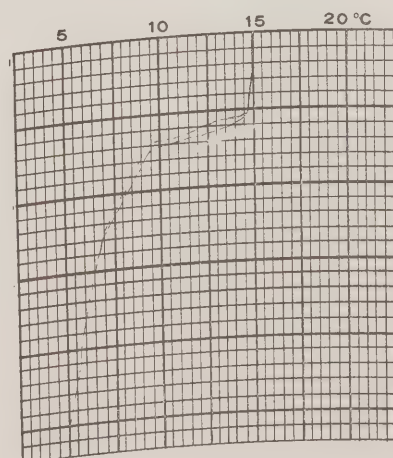
63/08/27/02.0

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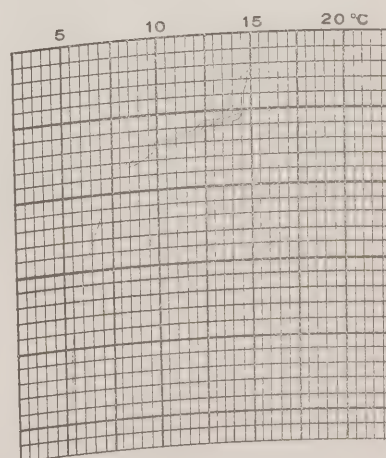
63/08/28/02.0

50° 06' n
145° 10' w

63/08/29/02.0

50° 07' n
145° 00' w

63/08/30/02.0

49° 55' n
144° 52' w

63/08/31/02.0

50° 08' n
145° 00' w

SECTION I

Description of data collection procedures



Figure 1.

The Canadian Weather Ship C.C.G.S. " St. Catharines " . (D.O.T. Photo)

The oceanographic winch is located on the starboard side of the signal deck, just aft of the bridge wing.



Figure 2.

The Canadian Weather Ship C.C.G.S. " Stonetown ".

(D.O.T. Photo)

Bathythermograph soundings boom can be seen below the bridge on the signal deck.

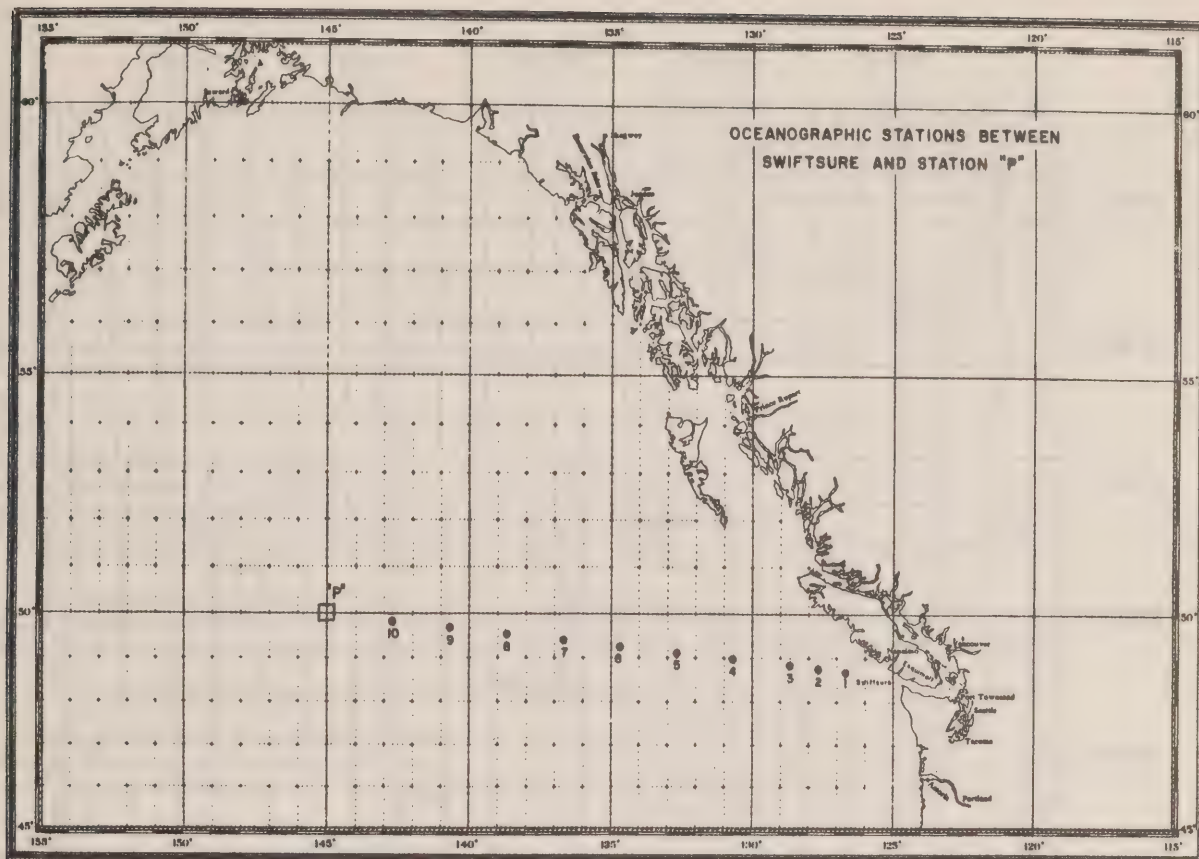


Figure 3. Locations of oceanographic stations observed between Swiftsure Bank and Ocean Weather Station "P".

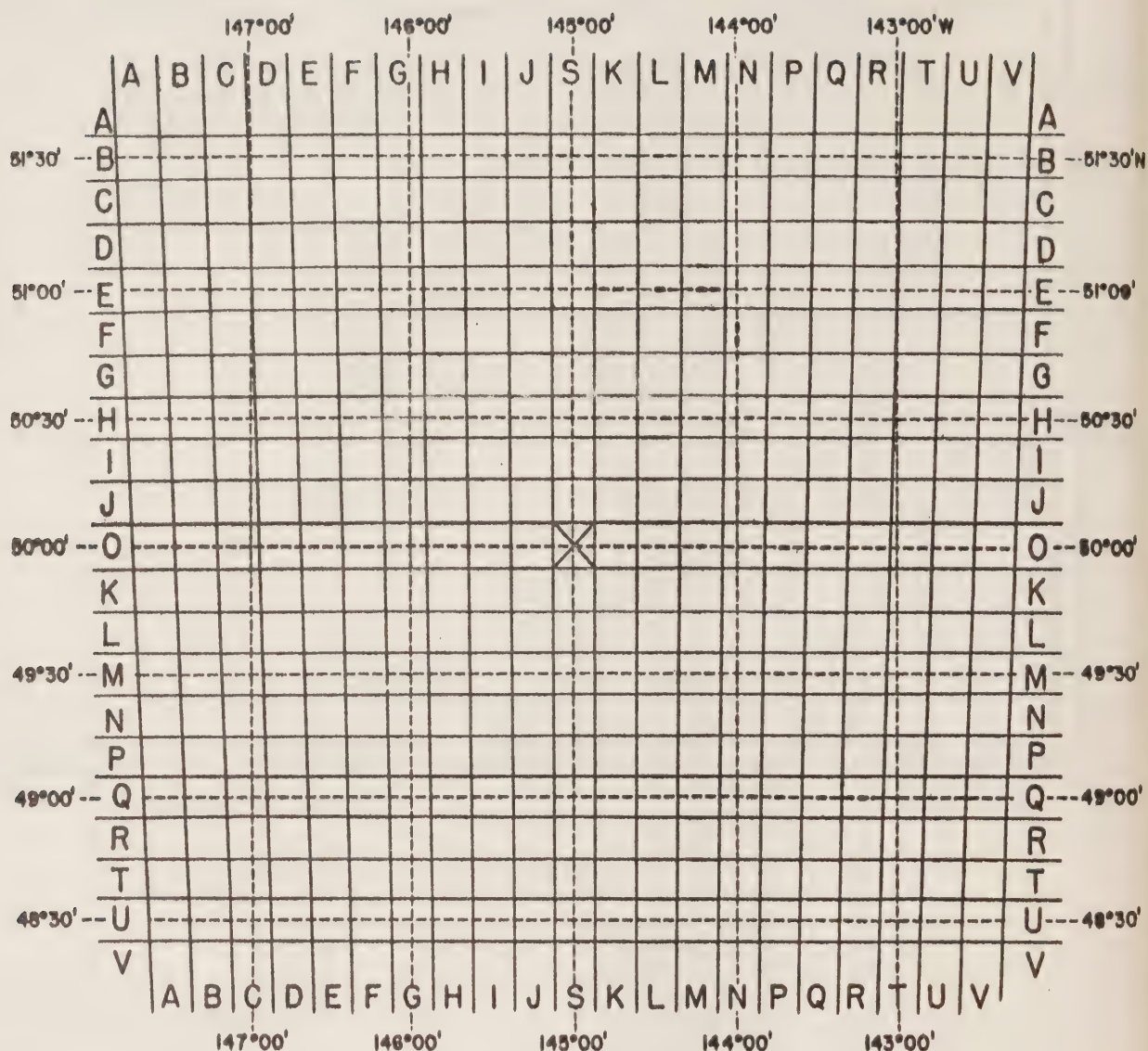


Figure 4.

Position-indicating grid for Ocean Weather Station "P", with mercator projection of a latitude and longitude grid superimposed.

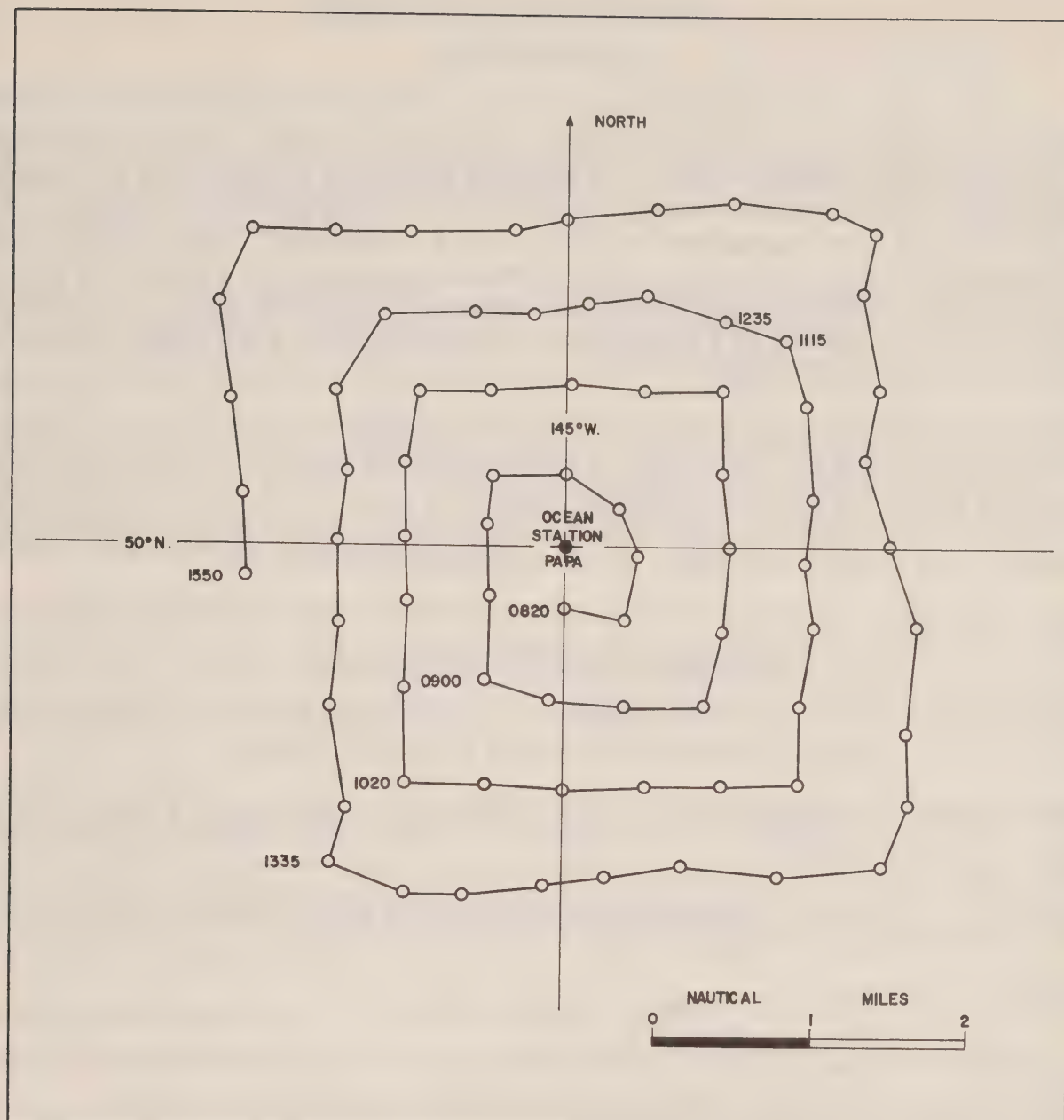


Figure 5

Locations of BT observations in space-time series of July 21, 1963,
C.C.G.S. "St. Catharines", Survey P-63-3

INTRODUCTION

Canadian operation of Ocean Weather Station "P" (latitude 50°00'N, longitude 145°00'W) was inaugurated in December 1950. The Station is manned by two vessels of the Canadian naval frigate class operated by the Marine Services of the Department of Transport. They are the C.C.G.S. "St. Catharines" and the C.C.G.S. "Stonetown" (Fig. 1 and 2) (Atlantic Oceanographic Group, MS, 1961). Each ship remains on station for a period of 6 weeks, and is then relieved by the alternate ship, thus maintaining a continuous watch. The chief purpose of the Station is to operate as a meteorological station for surface and upper-air observations, and as an air-sea rescue station.

Twice-daily bathythermograph observations have been made at Station "P" by the Pacific Oceanographic Group since July 1952. A program of more extensive oceanographic observations at Station "P" was commenced in August 1956 on board C.C.G.S. "St. Catharines". This was further extended in April 1959 by the addition of a series of oceanographic stations along the route to and from Station "P" and Swiftsure Bank (Fig. 3).

EXTRACT OF CRUISE LOG (P.S.T.)

- June 25, 0900: C.C.G.S. "St. Catharines" departed Esquimalt, B.C., enroute to Ocean Weather Station "P"; observed 10 stations enroute.
- June 28, 0945: rendezvous with C.C.G.S. "Stonetown" and commenced normal patrol routine.
- July 17 : U.S.S. "Chowanoc" anchored a special radar reflection buoy at exact center of Station "P".
- July 18, 1000: C.N.A.V. "Oshawa" arrived on Station "P" to conduct special Thermal Transient Survey.
- July 20, 1900: C.N.A.V. "Oshawa" completed survey work and departed.
- July 21, 0820: special 5-minute BT series observed until 1545.
- July 22 : oceanographic observations cancelled because of rough weather; wind, NW 30 knots.
- August 2, 0840: relieved on Station by C.C.G.S. "Stonetown" and proceeded on return trip; observed 10 oceanographic stations enroute.
- August 5, 0945: secured Public Works Graving Dock, Esquimalt, B.C.

OBSERVATION PROCEDURES

General program of observations by C.C.G.S. "St. Catharines"

The C.C.G.S. "St. Catharines" is equipped with deck and laboratory facilities required to make oceanographic observations. Oceanographers from the Pacific Oceanographic Group accompany the ship on each patrol.

Enroute to and returning from Station "P", ten oceanographic stations (Fig. 3) are observed, with serial observations of temperature and salinity to a depth of 2000 m and BT casts to 275 m. The stations are positioned at each even longitude $+40'$ interval. BT casts are obtained at the intervening odd longitude $+40'$ intervals, i.e. $129^{\circ} 40'W$, $131^{\circ} 40'W$, etc. At Station "P", a shallow oceanographic station to 400 m and an intermediate depth station to 2000 m are observed weekly, generally 4 days apart. At least 3 times during the survey, a deep cast from 2000 m to 4200 m is observed within 2 days of an intermediate station. Serial observations of temperature, salinity, and dissolved oxygen are made at all stations. A 275 m BT cast is made at each station also.

Twice-daily BT casts are made on Station at 0200 and 1700 G.M.T. A surface water sample for salinity determination is collected at the 0200 cast. Special series of BT casts to 135 m are made every second day in the morning, for the purpose of providing ocean temperature information to the Canadian Oceanographic Information Service at Esquimalt, B.C. (Giovando, MS, 1962).

Vertical zooplankton hauls from 150 m depth are made each morning on Station, and from 1200 m twice during the patrol. Surface horizontal tows of 10 minutes duration for three consecutive evenings are made at the beginning, middle, and end of each patrol. Ocean productivity measurements of photosynthesis rate (C_{14} method), and plant pigment concentration are made at Station "P" on surface samples obtained every second day, and on samples to 50 m depth at 2-week intervals.

Program of observations, C.C.G.S. "St. Catharines" Survey P-63-3, June 26-Aug. 5, 1963

Ten oceanographic stations and 33 BT casts were observed during the two trips to and from Station "P". Fifteen oceanographic station casts were made at Station "P" during the patrol; 3 to 400 m depth; 4 to 1500 m; 5 to 2000 m; and 3 in the 2000 to 4200 m interval. A total of 78 BT casts were made at Oceanographic stations (to 275 m) and daily at 0200 (to 135 m) and 1700 G.M.T. (to 275 m). Dissolved oxygen determinations were made on 237 water samples collected at the oceanographic stations.

Vertical zooplankton hauls from 150 m depth were made at Station "P" in the mornings of 23 days, and 2 hauls from 1200 m were made also. Surface horizontal plankton tows were made in the evenings of 9 days. Surface ocean productivity measurements were made during 10 days, and similar measurements were made on samples collected to 50 m depth on 3 days. BT observations to 135 m at 10-minute intervals for the OCEAN series were taken at 1800 G.M.T. on 13 days. A special space-time series of BT casts to 135 m were taken at 5-minute intervals for 7 hours on July 21. Surface salinity samples were collected during this special series. A track chart showing the cruise pattern and locations of the BT observations is presented in Figure 5.

A surface seawater sample of 2 1/2 litres was obtained for shipment to the Natural Tritium Laboratory, University of California, San Diego.

Soundings of ocean depth are not made during the Ocean Weather Station "P" surveys because the ship's sounder has a shallow depth range only. Therefore, the oceanographic station data headings in the data record do not list a depth. A table showing depths at oceanographic stations as obtained by interpolation from U.S.C. & G.S. Chart 8500 is presented below.

Ocean depth at oceanographic stations observed in Survey P-63-3

<u>Consec. Stn. No.</u>	<u>Depth (fms)</u>	<u>Consec. Stn. No.</u>	<u>Depth (fms)</u>
001	800	027	2165
002	1422	028	2000
003	1190	029	2080
004	1880	030	1200
005	1820	031	1800
006	1200	032	1800
007	2000	033	1200
008	2100	034	1422
009	2165	035	800
010 to			
026	2200		

Program of observations, C.C.G.S. "Stonetown", Patrol No. 57, Aug. 3-Sept. 13, 1963

BT casts were made twice-daily whilst on Station, at 0200 (to 135 m) and 1700 G.M.T. (to 275 m). Surface salinity samples were collected at the 0200 observation. OCEAN series BT casts to 135 m were made on 33 days during the patrol.

Oceanographic station procedures

1. Serial observations were made at depths of 10, 20, 30, 50, 75, 100, 125, 150, 175, 200, 250, 300, 400, 500, 750, 1000, 1250, 1500, 2000, 2500 (or 2400), 3000, 3500, 4000, and 4200 metres, depending on the type of station observed and the depth of water. The shallow stations to 400 m were observed in one cast. The intermediate depth stations to 1200, 1500, 2000 and 2400 m were observed in two casts; the first to 400 m, and the second from 500 m to the deepest sampling depth. The deep cast stations had observations in the interval 2000 to 4200 m.
2. Surface samples (0 metres) for salinity and dissolved oxygen determinations were obtained with a one-gallon bucket. The surface temperature was measured in this bucket sample with an armoured thermometer graduated at 0.5° C intervals.
3. Samples at depth were obtained with Nansen reversing water samplers. From each sampler, the first sample was drawn into a 300 ml B.O.D. bottle for dissolved oxygen analysis. Then, the second sample for salinity analysis was drawn into an 8-ounce glass medicine bottle and sealed with a plastic-lined screw cap. These two analyses were done in the shipboard laboratory.

4. Temperatures at depth were measured by deep-sea reversing thermometers of German (Richter & Wiese) or Japanese (Yoshino Keiki Co.) manufacture. Most of the samplers were equipped with 2 protected reversing thermometers each, except those at the depth intervals of 20, 50, 100, 150, 175 and 200 m, where only one protected thermometer was used. An unprotected thermometer was used on all samplers from 200 m to the deepest in each cast.
5. Water transparency and colour observations were made with a white secchi disc of 30 cm diameter.
6. Station locations were determined by the officers of the watch, who also made the meteorological observations used in the oceanographic records.

LABORATORY PROCEDURES

Methods of analyses

The salinity determinations of the oceanographic station samples collected during Survey P-63-3 were made on an inductive salinometer, Model 601 MK III, manufactured by Auto-Lab Industries Pty. Ltd., Sydney, Australia (Brown and Hamon, 1961). The samples obtained on Stations Consec. Nos. 001 to 022 inclusive were analysed on board ship, within 3 to 11 days after their collection. The samples obtained on Stations Consec. Nos. 023 to 035 were analysed in the shore laboratory within 7 to 9 days after collection. The salinity data are the means of duplicate determinations whose "conductivity ratio" values fell within an acceptable range. The accuracy of the determinations at the 35‰ salinity level is stated to be $\pm 0.003\%$ (Brown and Hamon, 1961). The surface samples collected during the special space-time series on July 21 were analysed in the shore laboratory using the MK III conductivity salinometer (Strickland, MS, 1958), as were also the 0200 surface salinity samples collected during the C.C.G.S. "Stonetown" Patrol No. 57.

The dissolved oxygen analyses were done in the shipboard laboratory by a modified Winkler method (Strickland and Parsons, 1960). The data are usually from a single determination, and the correct value lies in the range ± 0.06 ml/l.

The ocean productivity measurements were made in the shipboard laboratory according to the methods described by Strickland (1960). Results will be reported later in a publication of the Fisheries Research Board.

BATHYTHERMOGRAPH DATA

The BT traces have been drawn on standard pre-printed graphs resembling BT calibration grids of several depth ranges. The slides were positioned on the appropriate calibration grid in an adjustable holder, and displayed in a reflecting-type projector.

All BT traces were aligned using a temperature value obtained from a thermograph recording of the engine-room intake temperature. The top of the trace was always aligned with the zero-depth grid line.

The bathythermograms are arranged in a chronological order in each of three sections for each ship; the first presenting the 135 m casts; the second the 275 m casts; and the third the 135 m casts in the OCEAN series. The date-time and location information are noted below each bathythermogram, using the C.O.D.C. coding system. Those BT observations made at an oceanographic station are identified by an asterisk (*) preceding the date-time group. Only one of the 8 slides in each day's OCEAN group is reproduced as a bathythermogram. This slide was chosen as being representative of the group. The position co-ordinates are those of the last slide in the group. A fourth section has been added in the C.C.G.S. "St. Catharines" group, presenting the bathythermograms obtained in the special space-time series.

SURFACE SALINITY DATA

These are presented in a table listing the date, position, and salinity values. The data for the C.C.G.S. "St. Catharines" Survey P-63-3 are considered to have an accuracy of $\pm 0.003\text{‰}$ (Brown and Hamon, 1961). The July 21 space-time series data and the C.C.G.S. "Stonetown" Patrol No. 57 data are the means of duplicate determinations and have an accuracy range of $\pm 0.004\text{‰}$ at the 95% probability level (Strickland, MS 1958).

PERSONNEL

The oceanographer on board C.C.G.S. "St. Catharines" for Survey P-63-3 was Mr. R. G. Tippet. The captain was Mr. F. G. Nesbit. Members of the crew assisted in the oceanographic work, operating the winch and handling the gear. The regular twice-daily BT observations on both ships were made by the quartermasters under the supervision of the officers of the watch, who also made the accompanying meteorological observations.

The following listed persons in the Pacific Oceanographic Group assisted in the preparation of the data for presentation to the Canadian Oceanographic Data Centre:

D. G. Robertson:	supervision of Station "P" program
H. J. Hollister:	supervision of data summary, writing introduction
R. G. Tippet:	preparation of data summary sheets, drawing bathythermograms of Survey P-63-3
J. Wickett:	checking data summary sheets
M. Best:	drawing bathythermograms of space-time series
J. Wong:	drawing bathythermograms of C.C.G.S. "Stonetown" Patrol No. 57.

SECTION II

Description of the machine-generated data record

INTRODUCTION (Section II)

The following section is devoted to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms are transferred to punch cards for subsequent electronic data processing.

The data are processed on an IBM 1620 computer using the OCEANS II program (Sauer, C.D. and Fofonoff, N.P., 1963).

Besides computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and interpolation at Standard Oceanographic Depths.

After the data have been processed, the data-record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous duplimat masters. The duplimat masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a Standard Deviation (σ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "General Information" of Section II of the Data Record.

The measurement error estimate of a specific observation is stated as a multiple of the standard deviation derived as above and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, i.e., $1\sigma = A$, $2\sigma = B$, etc. (In the data record $1\sigma (A)$ is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray. A parabola is fitted through 3 values of a given variable (T, S, O₂) considered as a function of depth. The two interpolation parabolas require a total of 4 points (observed depths). The middle points are common to both parabolas. The average of the 2 values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement under normal routine field conditions (σ) by:

$$\frac{\sigma_1}{\sigma} = \left\{ \left(\frac{\Delta V_1}{\sigma^2} \right)^2 + \sum_{n=j-2}^{j+1} \left(\gamma_n \right)^2 \left(\frac{\sigma_n}{\sigma} \right)^2 \right\}^{\frac{1}{2}}, \text{ where}$$

σ_1 = Standard deviation of the combined error estimates at standard oceanographic depth

$$\Delta V_1 = \frac{1}{3} (V_{1,1} - V_{1,2}),$$

the interpolation error estimate of variable "V" at standard oceanographic depth.

γ = Interpolation polynomial coefficient.

Z_j = Observed depth.

Z_i = Standard oceanographic depth, such that: $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of this fraction $\frac{\sigma_1}{\sigma}$ is reported in the Data Record, e.g.: 2 = B, 3 = C, etc.

With respect to the interpolated value of the Salinity variable if reported to three decimal digits, the "interpolation error estimate" is given only when $\frac{\sigma_1}{\sigma} \geq 2$. If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

GENERAL INFORMATION

Institute: Pacific Oceanographic Group Nanaimo, B. C.

Observation Platforms: C. C. G. S. "St. Catharines" and C. C. G. S. "Stonetown".

Vessels' Cruising Speed: 13 knots.

Total Number of Stations Occupied: 35

Anemometer Height Above Sea Level: 15 metres.

Water transparency was obtained using a Secchi Disc.

Barometer readings were obtained using an Aneroid Barometer and were corrected prior to recording.

Air temperature was observed from a Sling Psychrometer.

Wet bulb temperature was observed from a Sling Psychrometer.

Surface sea water temperature was obtained from a bucket sample using a deck thermometer.

The following Standard Deviations were used to express both measurement and interpolation error estimates:

Temperature	0.02
Salinity	0.002
Oxygen	0.03

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE
NUMBER:

Assigned by the Institute. Starts off with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE
NUMBER:

Indicates the chronological order in which the stations were observed.

(3) LATITUDE:

Latitude and longitude give the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE:

Designates the geographic area code (see marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR:

The time (Greenwich Mean Time) at which the environmental surface observations were made.

It is reported to tenths of hours.

If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH

The sounding: The measured distance (by any method) from surface to bottom, corrected and reported in meters.

(11) MAXIMUM

SAMPLING DEPTH: A code to indicate the deepest sampling depth.

00 m - 50 m = 00

51 m - 150 m = 01

151 m - 250 m = 02

etc.

(12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).

(13) WATER COLOUR: A code based on the percentage of yellow (see table 2).

(14) WATER

TRANSPARENCY:

The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage; the General Information Chapter in Section II of the data record will state which method was used.

(15) WAVES 1

(D_wD_wP_wH_w-code):

The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(16) WAVES 2

(D_wD_wP_wH_w-code):

The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.

(17) WIND DIRECTION:

The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:- wind variable or direction unknown.

(18) WIND FORCE

(WND-FCE):

Beaufort Notation (See Table 6).

WIND SPEED

(WND-SPD):

Anemometer reading in metres per second.

(19) BAROMETER:

The barometric pressure expressed in millibars: the General Information Chapter in Section II of the data record will state the type of instrument, and whether corrections have been applied.

(20) AIR TEMPERATURE: To 1/10 of a degree Centigrade.

- (21) WET BULB: To 1/10 of a degree Centigrade.
- (22) WW CODE: Present Weather Code (See Table 7).
Ref: WMO Code 4677.
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8).
Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9).
Ref: WMO Code 2700.
- (25) VISIBILITY: Visibility at the surface (See Table 10).
Ref: WMO Code 4300.
- (26) STATION: A strictly local station reference number, usually assigned prior to carrying out a cruise.
- (27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

OBSERVED DATA HEADINGS

(1) GMT (2) DEPTH (3) TEMP (4) SAL (5) OXYGEN (6) SGMT (7) SOUND (8) PO ₄ (9) -P- (10) NO ₂ (11) NO ₃ (12) SiO ₃ (13) pH.
--

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical observations were collected during the cruise.

- (1) G. M. T. The Greenwich Mean Time of in-situ thermometer inversion and sea water sample collection.

When a multiple cast was initiated before and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH:

The depth in meters is computed from the meter wheel reading, the wire angle, and the corrected unprotected thermometer reading at the moment the oceanographic bottle reversed.

Alphabetical characters "B" to "I", (if present), immediately to the right of this column, are measurement error estimates (see: "Introduction" to Section II of the data record).

(3) TEMPERATURE:

In-situ temperatures from deepsea reversing thermometers graduated in 0.1° C. intervals, and read to 0.01° C. Surface temperature collection procedures as indicated in the chapter "Observation Procedures" of Section I, and/or under "General Information" of Section II.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(4) SALINITY:

Salinity as defined by:

$$S = 0.03 + 1.805 Cl \text{ ‰}$$

- a. 1/100 parts per 1000, or
- b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (2).

In case b: no error estimate indication is provided for, but the additional decimal digit takes its place.

(5) OXYGEN:

The concentration of dissolved oxygen as expressed in millilitres per litre to 2 decimal places.

An alphabetical character following the value is the measurement error estimate as referred to under (2).

(6) SIGMA-T:

The specific gravity anomaly as defined by:
(Specific gravity - 1) × 1000 (e.g., σ_t reported as 2456 reads 24.56 and corresponds to a specific gravity of 1.02456).

- (7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula, expressed in terms of temperature, salinity and total pressure.
- (8) PO_4 Phosphate - Phosphorus reported to hundredths of microgram-atoms per litre
- (9) -P- Total Phosphorus reported to hundredths of microgram-atoms per litre
- (10) NO_2 Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre -No dissolved nitrogen included-
- (11) NO_3 Nitrate-Nitrogen reported to tenths of microgram-atoms per litre
- (12) SiO_3 Silicate-Silicon reported in whole microgram-atoms per litre
- (13) pH The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

INTERPOLATED DATA HEADINGS

(1) DEPTH (2) TEMP (3) SAL (4) OXYGEN (5) SGMT (6) SOUND (7) DELTA-D (8) POT-EN (9) SV A.
--

- (1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.

(2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(3) SALINITY

A. The reported salinity values are observed to three decimal places.

(i) the interpolation error estimate is less than twice the standard deviation of measurement

-the interpolated value is reported to three decimal places (e.g., 30.139).

(ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.

-the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e.g., 29.23C).

B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.

-the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e.g., 30.59B).

(4) OXYGEN:

Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to Section II of the Data Record).

(5) SIGMA-T:

Computed from Temperature and Salinity values at standard oceanographic depth,

(6) SOUND

VELOCITY:

Computed from temperature and salinity values at standard oceanographic depth, and expressed in tenths of metres per second (e.g., 1462.3 m/sec).

(7) DELTA-D:

The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P [\alpha(T, S, P) - \alpha_{35, 0, P}] dP$$

ΔD is expressed in dynamic metres (10^5 ergs/gram) and recorded to three decimal places (e. g., 2.345 dyn. metres).

(8) POTENTIAL
ENERGY
ANOMALY:

The Potential energy anomaly χ as defined by:

$$\chi = \frac{1}{g} \int_0^P \rho \delta dP = \int_0^z \rho \delta dz$$

χ is expressed in units of 10^8 ergs/cm² and recorded to two decimal places (e. g., 116.44).

(9) SPECIFIC
VOLUME
ANOMALY:

The specific volume anomaly as defined by;

$$\delta = \alpha - \alpha_{35, 0, P}$$

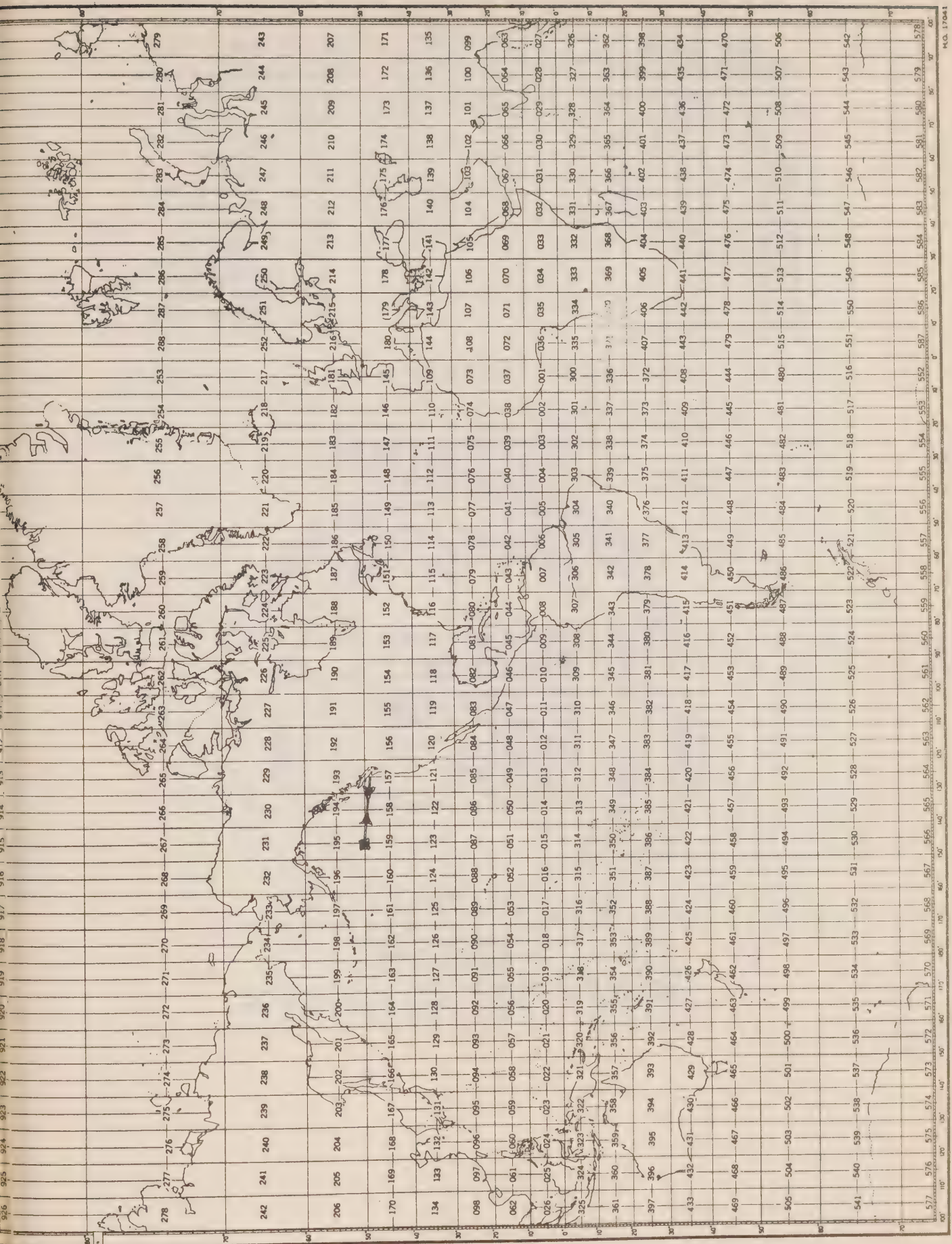
δ is conventionally reported as $10^5 \delta$, and recorded to one decimal place (e. g., 0.001234 is recorded as 123.4 units of 10^{-5} ml/gm.).

SPECIAL CHARACTERS

† (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side refers to the appropriate level.

* (Asterisk) : to the left of the "Interpolated Data" marks standard depth levels according to the following specifications:

If three or more standard depth levels fall within an observed depth interval, the third and all consequent levels within that interval are preceded by an asterisk to indicate that more than two interpolations were carried out utilizing the same set of interpolation parabolas.



MARS DEN SQUARE CHART

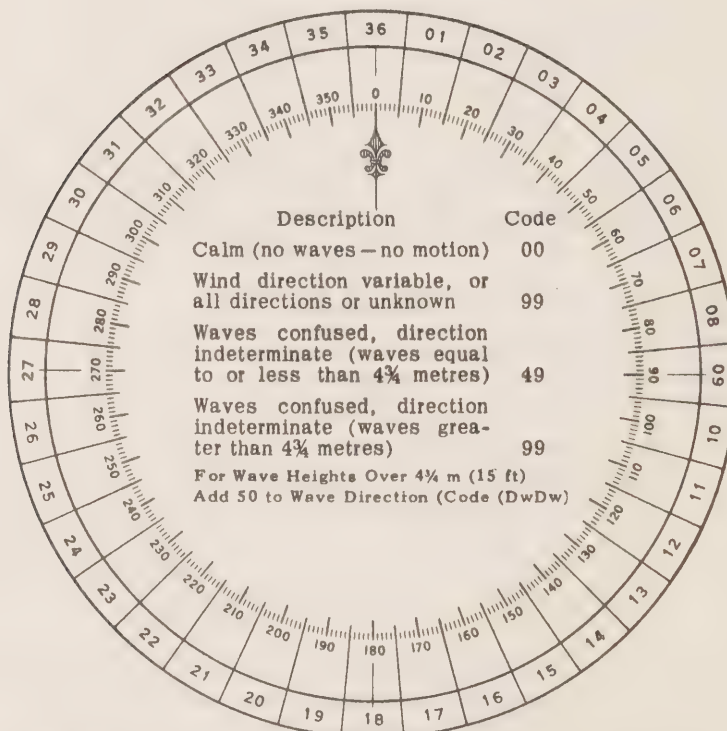
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (Pw)
(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (Hw)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than $\frac{1}{4}$ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	$\frac{1}{2}$ m ($1\frac{1}{2}$ ft)		1 $5\frac{1}{2}$ m (17 $\frac{1}{2}$ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	$1\frac{1}{2}$ m (5 ft)		3 $6\frac{1}{2}$ m (21 ft)
4	2 m ($6\frac{1}{2}$ ft)		4 7 m (22 $\frac{1}{2}$ ft)
5	$2\frac{1}{2}$ m (8 ft)		5 $7\frac{1}{2}$ m (24 ft)
6	3 m ($9\frac{1}{2}$ ft)		6 8 m (25 $\frac{1}{2}$ ft)
7	$3\frac{1}{2}$ m (11 ft)		7 $8\frac{1}{2}$ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	$4\frac{1}{2}$ m (14 ft)		9 $9\frac{1}{2}$ m (30 $\frac{1}{2}$ ft) or more
x	Height not determined		

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure ww			
No meteors except photometeors	00	Cloud development not observed or not observable	characteristic change of the state of sky during the past hour
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
Haze, dust, sand or smoke	03	Clouds generally forming or developing	
	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes	
	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	
	11	Patches of } shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea	
	12		More of less continuous }
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precepitation at the time of observation	
	18	Squalls	} at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel clouds }	
ww = 20 - 29			
		Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	
		20	Drizzle (not freezing) or snow grains
		21	Rain (not freezing)
		22	Snow
		23	Rain and snow or ice pellets, type (a)
		24	Freezing drizzle or freezing rain
		25	Shower (s) of rain
		26	Shower (s) of snow, or of rain and snow
		27	Shower (s) of hail, or of rain and hail
		28	Fog or ice fog
		29	Thunderstorm (with or without precipitation)
ww = 30 - 39			
		Duststorm, sandstorm, drifting or blowing snow	
		30	} Slight or moderate duststorm or sandstorm
		31	
		32	} Severe duststorm or sandstorm
		33	
		34	} Heavy blowing snow
		35	
		36	Slight or moderate blowing snow
		37	Heavy drifting snow
		38	Slight or moderate blowing snow
		39	Heavy blowing snow
ww = 40 - 49			
		Fog or ice fog at the time of observation	
		40	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer
		41	Fog or ice fog in patches
		42	Fog or ice fog, sky visible
		43	Fog or ice fog, sky invisible
		44	Fog or ice fog, sky visible
		45	Fog or ice fog, sky invisible
		46	Fog or ice fog, sky visible
		47	Fog or ice fog, sky invisible
		48	Fog, depositing rime, sky visible
		49	Fog, depositing rime, sky invisible

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

- | | | | |
|----|--|---|--------------------------------------|
| 50 | Drizzle, not freezing, intermittent | { | slight at time of observation |
| 51 | Drizzle, not freezing, continuous | | |
| 52 | Drizzle, not freezing, intermittent | { | moderate at time of observation |
| 53 | Drizzle, not freezing, continuous | | |
| 54 | Drizzle, not freezing, intermittent | { | heavy (dense) at time of observation |
| 55 | Drizzle, not freezing, continuous | | |
| 56 | Drizzle, freezing, slight | | |
| 57 | Drizzle, freezing, moderate or heavy (dense) | | |
| 58 | Drizzle and rain, slight | | |
| 59 | Drizzle and rain, moderate or heavy | | |

ww = 60 - 69 Rain

- | | | | |
|----|---|---|---------------------------------|
| 60 | Rain, not freezing, intermittent | { | slight at time of observation |
| 61 | Rain, not freezing, continuous | | |
| 62 | Rain, not freezing, intermittent | { | moderate at time of observation |
| 63 | Rain, not freezing, continuous | | |
| 64 | Rain, not freezing, intermittent | { | heavy at time of observation |
| 65 | Rain, not freezing, continuous | | |
| 66 | Rain, freezing, slight | | |
| 67 | Rain, freezing, moderate or heavy | | |
| 68 | Rain or drizzle and snow, slight | | |
| 69 | Rain or drizzle and snow, moderate or heavy | | |

70 - 79 Solid precipitation not in showers

- | | | | |
|----|---|---|---------------------------------|
| ww | | | |
| 70 | Intermittent fall of snow flakes | { | slight at time of observation |
| 71 | Continuous fall of snow flakes | | |
| 72 | Intermittent fall of snow flakes | { | moderate at time of observation |
| 73 | Continuous fall of snow flakes | | |
| 74 | Intermittent fall of snow flakes | { | heavy at time of observation |
| 75 | Continuous fall of snow flakes | | |
| 76 | Ice prisms (with or without fog) | | |
| 77 | Snow grains (with or without fog) | | |
| 78 | Isolated starlike snow crystals (with or without fog) | | |
| 79 | Ice pellets, type (a) | | |

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

- | | | | |
|----|--|---|---|
| 80 | Rain shower(s), slight | | |
| 81 | Rain shower(s), moderate or heavy | | |
| 82 | Rain shower(s), violent | | |
| 83 | Shower(s) of rain and snow mixed, slight | | |
| 84 | Shower(s) of rain and snow mixed, moderate or heavy | | |
| 85 | Snow shower(s), slight | | |
| 86 | Snow shower(s), moderate or heavy | | |
| 87 | Shower(s) of snow pellets or ice pellets, type (b), with or without rain or rain and snow mixed | { | - slight |
| 88 | | | |
| 89 | Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder | { | - moderate or heavy |
| 90 | | | |
| 91 | Slight rain at time of observation | { | thunderstorm during the preceding hour but not at time of observation |
| 92 | Moderate or heavy rain at time of observation | | |
| 93 | Slight snow, or rain and snow mixed or hail at time of observation | { | |
| 94 | Moderate or heavy snow, or rain and snow mixed or hail at time of observation | | |
| 95 | Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation | { | thunderstorm at time of observation |
| 96 | Thunderstorm, slight or moderate, with hail at time of observation | | |
| 97 | Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation | { | |
| 98 | Thunderstorm, combined with duststorm or sandstorm at time of observation | | |
| 99 | Thunderstorm, heavy, with hail at time of observation | | |

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
90	Less than 50 metres (less than 55 yards)
91	50-200 metres (approx. 55-220 yards)
92	200-500 metres (approx. 220-550 yards)
93	500-1,000 metres (approx. 550 yards- $\frac{5}{8}$ n.m.)
94	1-2 km (approx. $\frac{5}{8}$ -1 n.m.)
95	2-4 km (approx. 1-2 n.m.)
96	4-10 km (approx. 2-6 n.m.)
97	10-20 km (approx. 6-12 n.m.)
98	20-50 km (approx. 12-30 n.m.)
99	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

SECTION III

Serial oceanographic data

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2522	AIR T 12.2	VIS 97
CONS. NO 001	MONTH 6	MXSAMPD 12		WAVES 2 2723	WET B 11.1	STN 001
LAT 48-42 N	DAY 26	NO.DPTH 18		WND-DIR 200	WW-CODE 25	
LON 126-40 W	HR 03.2	W-COLOR		WND-SPD 08	CLD-TPE 5	
MARSD SQ 157		W-TRNSP		BARD 1021.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
032	0000	140 B	31880		2380	15003
032	0010	1313	31890		2398	14976
032	0020	1298 B	31896		2402	14973
032	0030	1295	31888		2402	14973
032	0050	0929 B	32339		2501	14852
032	0075	0849 B	32585		2533	14829
032	0100	0784 B	33102		2583	14815
032	0125	0751 B	33474		2617	14811
032	0150		33628			
032	0175	0706 B	33748		2645	14805
032	0200	0674 B	33858		2658	14798
032	0250	0593	33970		2677	14775
032	0300	0553 B	34010		2685	14768
032	0400	0525	34069		2693	14774
037	0496	0491 C	34128		2702	14776
037	0744	0413	34279		2722	14787
037	0982	0360 B	34383		2736	14806
037	1190	0315	34448		2745	14822

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1400 B	31880		2380	15003	0000	00000	4109
0010	1313	31890		2398	14976	0040	00002	3937
0020	1298 B	31896		2402	14973	0080	00008	3907
0030	1295	31888		2402	14973	0119	00018	3910
0050	0929 B	32339		2501	14852	0188	00045	2962
0075	0849 B	32585		2533	14829	0259	00090	2666
0100	0784 B	33102		2583	14815	0320	00144	2193
0125	0751 B	33474		2617	14811	0371	00203	1875
0150	0728 B	33628		2632	14808	0417	00267	1733
0175	0706 B	33748		2645	14805	0459	00337	1618
0200	0674 B	33858		2658	14798	0498	00412	1497
0225	0632 B	3393 B		2669	14786	0535	00492	1395
0250	0593	33970		2677	14775	0569	00575	1317
0300	0553 B	34010		2685	14768	0633	00757	1245
0400	0525	34069		2693	14774	0756	01194	1178
0500	0490 C	34131		2702	14777	0871	01724	1101
0600	0456 C	34194		2711	14780	0978	02329	1025

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
*0700	0425	34254		2719	14785	1078	02995	0954
0800	0399	34307		2726	14791	1172	03714	0894
1000	0353	34391		2737	14806	1342	05285	0794
1200	0313	34450		2746	14823	1495	07011	0718

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2822	AIR T 11.9	VIS 96
CONS. NO 002	MONTH 6	MXSAMPD 24		WAVES 2 2823	WET B 11.3	STN 002
LAT 48-47 N	DAY 26	NO.DPTH 20		WND-DIR 280	WW-CODE 25	
LON 127-40 W	HR 08.0	W-COLOR		WND-SPD 08	CLD-TPE 6	
MARSD SQ 157		W-TRNSP		BARO 1019.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
080	0000	134 B	31776		2384	14982
080	0010	1322	31888		2396	14979
080	0020	1322 B	31897		2397	14981
080	0030	1302	32002		2409	14977
080	0050	0999 B	32348		2491	14878
080	0074	0890	32388		2511	14842
080	0099	0864 B	32742		2543	14840
080	0124	0799	33230		2591	14826
080	0173	0735 B	33753		2641	14816
080	0198	0711 B	33855		2652	14812
080	0248	0654	33939		2667	14799
080	0297	0592	33950		2676	14782
080	0396	0516	33998		2688	14768
087	0488	0470 C	34069		2699	14766
087	0633	0408	34265		2722	14766
087	0979	0353 B	34389		2737	14802
087	1226	0298	34472		2749	14821
087	1476	0252 B	34523		2757	14844
087	1975	0196	34598		2767	14906
087	2374	0178	34642		2772	14967

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1340 B	31776		2384	14982	0000	00000	4070
0010	1322	31888		2396	14979	0040	00002	3956
0020	1322 B	31897		2397	14981	0080	00008	3951
0030	1302	32002		2409	14977	0119	00018	3839
0050	0999 B	32348		2491	14878	0189	00046	3064
0075	0888	32398		2512	14841	0263	00093	2862
0100	0862 B	32762		2545	14840	0331	00154	2557
0125	0797	33246		2592	14826	0390	00221	2109
0150	0758 B	3357 C		2623	14819	0439	00290	1818
0175	0733 B	33764		2642	14816	0483	00362	1643
0200	0709 B	33861		2653	14812	0523	00439	1542
0225	0681	3392 B		2661	14806	0561	00522	1468
0250	0651	33940		2667	14798	0597	00610	1414
0300	0589	33951		2676	14782	0667	00805	1333
0400	0514	34000		2689	14768	0795	01264	1216

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0464 C	3409 B		2701	14765	0912	01803	1105
0600	0421	3422 C		2717	14766	1017	02390	0965
0700	0393 B	3431 F		2727	14772	1110	03010	0877
0800	0375 D	3436 I		2732	14781	1196	03674	0829
1000	0348 B	34397		2738	14804	1359	05181	0784
1200	0304	34464		2748	14819	1510	06871	0697
1500	0248 B	34527		2758	14847	1707	09602	0604
2000	0193 B	34603		2768	14909	1989	14626	0506

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2822	AIR T 11.6	VIS 95
CONS. NO 003	MONTH 6	MXSAMPD 24		WAVES 2 2823	WET B 10.5	STN 003
LAT 48-51 N	DAY 26	NO.DPTH 20		WND-DIR 280	WW-CODE 25	
LON 128-40 W	HR 13.2	W-COLOR		WND-SPD 09	CLD-TPE 6	
MARSD SQ 157		W-TRNSP		BARO 1016.	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
132	0000	141 B	31805		2372	15006
132	0010	1295	31787		2394	14969
132	0020	1294 B	31787		2394	14970
132	0030	1294	31785		2394	14972
132	0050	0994 B	32335		2491	14876
132	0075	0872	32470		2520	14836
132	0100	0772 B	32997		2576	14809
132	0125	0727 B	33492		2622	14802
132	0175	0720 B	33862		2652	14812
132	0200	0692 B	33907		2659	14806
132	0250	0632	33948		2670	14791
132	0300	0584	33964		2678	14780
132	0400	0498 B	34001		2691	14762
140	0500	0465 C	34108		2703	14766
140	0750	0388 B	34276		2724	14778
140	1000	0335	34395		2739	14798
140	1250	0285	34470		2750	14820
140	1500	0239 B	34532		2759	14843
140	2000	0194	34599		2768	14909
140	2400	0177	34628		2771	14970

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1410 B	31805		2372	15006	0000	00000	4183
0010	1295	31787		2394	14969	0041	00002	3980
0020	1294 B	31787		2394	14970	0081	00008	3980
0030	1294	31785		2394	14971	0121	00018	3984
0050	0994 B	32335		2491	14876	0192	00047	3066
0075	0872	32470		2520	14836	0265	00093	2785
0100	0772 B	32997		2576	14809	0329	00149	2255
0125	0727 B	33492		2622	14802	0380	00208	1829
0150	0721 D	3375 I		2643	14807	0424	00269	1631
0175	0720 B	33862		2652	14812	0464	00336	1552
0200	0692 B	33907		2659	14806	0502	00409	1485
0225	0662 B	33933		2665	14798	0539	00489	1429
0250	0632	33948		2670	14791	0574	00575	1383
0300	0584	33964		2678	14780	0642	00767	1317
0400	0498 B	34001		2691	14762	0769	01220	1197

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0465 C	34108		2703	14766	0885	01750	1089
0600	0432 C	3419 B		2713	14770	0990	02345	1003
0700	0402 B	3425 B		2721	14775	1088	02996	0930
0800	0376 B	34304		2728	14781	1179	03696	0869
1000	0335	34395		2739	14798	1345	05222	0770
1200	0295	34457		2748	14815	1493	06891	0692
1500	0239 B	34532		2759	14843	1688	09578	0590
2000	0194	34599		2768	14909	1967	14569	0510

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2836	AIR T 12.7	VIS 97
CONS. NO 004	MONTH 6	MXSAMPD 15		WAVES 2 2836	WET B 10.5	STN 004
LAT 49-01 N	DAY 26	NO.DPTH 18		WND-DIR 280	WW-CODE 02	
LON 130-40 W	HR 21.5	W-COLOR		WND-SPD 10	CLD-TPE 6	
MARSD SQ 158		W-TRNSP		BARO 1016.	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
215	0000	145 B	32513		2418	15027
215	0010	1290	32446		2446	14975
215	0020	1284 B	32415		2445	14974
215	0030	1278	32416		2446	14974
215	0050	0950 B	32445		2506	14861
215	0075	0911	32480		2515	14851
215	0100	0854 B	32576		2531	14835
215	0124	0729	33136		2593	14798
215	0174	0676 B	33860		2658	14795
215	0199	0651 B	33901		2664	14789
215	0249	0586 B	33935		2675	14772
215	0299	0538	33933		2681	14761
215	0399	0476 B	33985		2692	14752
220	0500	0459 C	34098		2703	14763
220	0750	0380	34283		2726	14774
220	1000	0324	34399		2741	14794
220	1250	0277	34479		2751	14817
220	1500	0238 B	34527		2758	14842

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1450 B	32513		2418	15027	0000	00000	3743
0010	1290	32446		2446	14975	0036	00002	3486
0020	1284 B	32415		2445	14974	0071	00007	3500
0030	1278	32416		2446	14974	0107	00016	3490
0050	0950 B	32445		2506	14861	0171	00042	2916
0075	0911	32480		2515	14851	0243	00088	2835
0100	0854 B	32576		2531	14835	0313	00150	2684
0125	0727	33158		2595	14797	0373	00218	2077
0150	0684 F	3360 E		2636	14790	0420	00285	1692
0175	0675 B	33864		2658	14794	0460	00351	1491
0200	0650 B	33902		2664	14789	0497	00422	1433
0225	0617 B	33925		2670	14780	0532	00499	1378
0250	0585 B	33935		2675	14772	0567	00582	1333
0300	0537	33933		2681	14760	0633	00768	1283
0400	0476 B	33986		2692	14752	0757	01213	1182
0500	0459 C	34098		2703	14763	0872	01740	1090
0600	0429 C	3418 B		2713	14769	0977	02335	1001

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0700	0397 B	34254		2722	14773	1074	02982	0921
0800	0368	34310		2729	14778	1164	03672	0854
1000	0324	34399		2741	14794	1327	05170	0755
1200	0286	34466		2749	14812	1472	06802	0675
1500	0238 B	34527		2758	14842	1665	09465	0592

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 3523	AIR T 13.8	VIS 97
CONS. NO 005	MONTH 6	MXSAMPD 15		WAVES 2 2938	WET B 11.1	STN 005
LAT 49-10 N	DAY 27	NO.DPTH 18		WND-DIR 350	WW-CODE 02	
LON 132-40 W	HR 05.5	W-COLOR		WND-SPD 09	CLD-TPE 8	
MARSD SQ 158		W-TRNSP		BARO 1018.	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
055	0000	125 B	32549		2461	14961
055	0010	1228	32499		2462	14955
055	0020	1225 B	32480		2461	14955
055	0030	0952	32487		2509	14859
055	0050	0854 B	32486		2524	14825
055	0075	0814 B	32504		2532	14814
055	0100	0719 B	32792		2568	14785
055	0125	0630	33163		2609	14759
055	0175	0634 B	33733		2653	14776
055	0200	0631 B	33835		2661	14781
055	0250	0585	33890		2672	14771
055	0300	0532	33893		2678	14758
055	0400	0456 B	33942		2691	14744
061	0499	0416 B	34080		2706	14745
061	0749	0360	34272		2727	14766
061	0999	0310	34388		2741	14787
061	1249	0270	34455		2750	14813
061	1500	0234 B	34525		2759	14841

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1250 B	32549		2461	14961	0000	00000	3334
0010	1228	32499		2462	14955	0034	00002	3333
0020	1225 B	32480		2461	14955	0067	00007	3344
0030	0952	32487		2509	14859	0098	00015	2884
0050	0854 B	32486		2524	14825	0155	00038	2742
0075	0814 B	32504		2532	14814	0223	00081	2676
0100	0719 B	32792		2568	14785	0286	00137	2336
0125	0630	33163		2609	14759	0340	00199	1949
0150	0618 F	3349 E		2636	14763	0386	00263	1691
0175	0634 B	33733		2653	14776	0427	00331	1535
0200	0631 B	33835		2661	14781	0464	00403	1459
0225	0612 B	3388 C		2667	14778	0500	00482	1406
0250	0585	33890		2672	14771	0535	00567	1367
0300	0532	33893		2678	14758	0603	00757	1307
0400	0456 B	33942		2691	14744	0729	01207	1193
0500	0416 B	34081		2706	14745	0842	01728	1053
0600	0389 B	3418 C		2716	14752	0944	02301	0962

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
*0700	0368	3425 B		2724	14760	1038	02926	0895
0800	0349	34301		2730	14770	1126	03602	0841
1000	0310	34388		2741	14788	1286	05080	0747
1200	0277	34444		2748	14808	1431	06712	0682
1500	0234 B	34525		2759	14841	1625	09381	0589

C-REF-NO 003	YR 1963	DEPTH	WAVES 1 3223	AIR T 12.2	VIS 98
CONS. NO 006	MONTH 6	MXSAMPD 15	WAVES 2 2838	WET B 09.9	STN 006
LAT 49-20 N	DAY 27	NO.DPTH 18	WND-DIR 320	WW-CODE 02	
LON 134-40 W	HR 13.6	W-COLOR	WND-SPD 07	CLD-TPE 8	
MARSD SQ 158		W-TRNSP	BARO 1020.	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
136	0000	134 B	32328		2427	14989
136	0009	1151	32309		2461	14925
136	0019	1146 B	32308		2462	14925
136	0028	1134	32316		2465	14922
136	0047	0854 B	32463		2523	14825
136	0070	0801 B	32486		2532	14808
136	0094	0735 B	32799		2566	14791
136	0117	0659	33353		2620	14772
136	0164	0646 B	33814		2658	14780
136	0188	0628 B	33871		2665	14778
136	0235	0582 B	33938		2676	14768
136	0282	0540	33962		2683	14759
136	0376	0470 B	34014		2695	14746
142	0486	0441	34143		2708	14754
142	0732	0361	34295		2729	14763
142	0981	0306	34382		2741	14783
142	1234	0267	34443		2749	14809
142	1492	0235 B	34515		2758	14840

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1340 B	32328		2427	14989	0000	00000	3664
0010	1146 B	32308		2462	14924	0035	00002	3329
0020	1147 B	32308		2462	14925	0069	00007	3333
0030	1108 E	3233 B		2471	14913	0102	00015	3252
0050	0838 D	3246 D		2525	14819	0162	00039	2737
0075	0788 B	32528		2537	14805	0229	00082	2622
0100	0714 B	3294 H		2580	14785	0290	00136	2217
0125	0651 C	3348 E		2631	14772	0340	00193	1739
0150	0641 D	3375 H		2653	14775	0381	00251	1530
0175	0638	3385 B		2662	14780	0419	00313	1455
0200	0617 B	33893		2668	14776	0455	00382	1398
0225	0592 B	33928		2674	14770	0489	00458	1344
0250	0568 B	33948		2678	14765	0523	00539	1303
0300	0524	33970		2685	14756	0587	00720	1240
0400	0461 B	3404 B		2698	14747	0706	01146	1125
0500	0436	34155		2710	14755	0815	01644	1021
0600	0404	3423 C		2719	14759	0914	02202	0939

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
*0700	0371	34282		2727	14762	1005	02811	0871
0800	0344	34323		2733	14768	1090	03469	0818
1000	0303	34387		2742	14784	1248	04921	0740
1200	0272	34435		2748	14805	1392	06546	0682
1500	0234 B	34517		2758	14841	1587	09228	0596

C-REF-NO 003	YR 1963	DEPTH	WAVES 1 2622	AIR T 12.2	VIS 97
CONS. NO 007	MONTH 6	MXSAMPD 25	WAVES 2 2834	WET B 09.9	STN 007
LAT 49-26 N	DAY 27	NO.DPTH 21	WND-DIR 260	WW-CODE 02	
LON 136-40 W	HR 21.1	W-COLOR 60	WND-SPD 07	CLD-TPE 6	
MARSD SQ 158		W-TRNSP 10	BARO 1020.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
211	0000	114 B	32500		2478	14922
211	0010	1112	32472		2481	14914
211	0020	1085 B	32466		2485	14906
211	0030	1084	32467		2485	14907
211	0050	0829 B	32490		2528	14816
211	0074	0744	32496		2541	14787
211	0099	0707 B	32516		2548	14777
211	0124	0560	33246		2624	14732
211	0148	0584 B	33652		2653	14751
211	0173		33821			
211	0198	0558 B	33862		2673	14751
211	0248	0495 B	33878		2681	14734
211	0298	0451	33906		2689	14724
211	0397	0411 B	33973		2698	14725
219	0483	0392 B	34079		2708	14732
219	0728	0349	34265		2727	14757
219	0973	0306	34371		2740	14781
219	1219	0268	34451		2750	14807
219	1471	0236 B	34514		2758	14837
219	1973	0194	34596		2767	14904
219	2473	0174 B	34640		2773	14982

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1140 B	32500		2478	14922	0000	00000	3175
0010	1112	32472		2481	14914	0032	00002	3150
0020	1085 B	32466		2485	14906	0063	00006	3111
0030	1084	32467		2485	14907	0095	00014	3111
0050	0829 B	32490		2528	14816	0153	00038	2704
0075	0743	3249 B		2541	14787	0220	00080	2589
0100	0700 B	3254 C		2551	14775	0284	00138	2498
0125	0560	33268		2626	14732	0338	00199	1786
0150	0584 B	33673		2655	14751	0379	00257	1516
0175	0579 B	33827		2667	14755	0416	00318	1397
0200	0556 B	33863		2673	14751	0450	00384	1345
0225	0525 B	3388 B		2678	14742	0484	00457	1303
0250	0493 B	33879		2682	14733	0516	00536	1266
0300	0450	33907		2689	14724	0578	00711	1202

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0400	0410 B	33977		2698	14725	0695	01130	1117
0500	0389 B	34096		2710	14734	0803	01624	1013
0600	0370 B	3418 B		2719	14744	0901	02179	0936
*0700	0353	34250		2726	14754	0993	02789	0876
0800	0336	34302		2732	14764	1079	03452	0826
1000	0302	34381		2741	14784	1238	04914	0743
1200	0271	34446		2749	14805	1381	06531	0673
1500	0233 B	34520		2758	14840	1574	09189	0592
2000	0191 B	34602		2768	14908	1852	14157	0504
2500	0174 B	34641		2773	14986	2101	19914	0472

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2722	AIR T 11.6	VIS 0
CONS. NO 008	MONTH 6	MXSAMPD 15		WAVES 2 2733	WET B 11.6	STN 008
LAT 49-33 N	DAY 28	NO.DPTH 19		WND-DIR 270	WW-CODE 45	
LCN 138-40 W	HR 05.5	W-COLOR		WND-SPD 07	CLD-TPE	
MARSD SQ 158		W-TRNSP		BARO 1018.	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
055	0000	114 B	32460		2475	14922
055	0010	1096	32468		2483	14908
055	0020	1088 B	32457		2484	14906
055	0030	0948	32484		2510	14857
055	0050	0786 B	32499		2535	14799
055	0075	0665	32519		2554	14756
055	0100	0595 B	32687		2576	14735
055	0125	0594	33401		2632	14748
055	0150	0601 B	33708		2655	14759
055	0175	0588 B	33816		2665	14759
055	0200	0562 B	33867		2673	14753
055	0250	0498 B	33893		2682	14736
055	0300	0452	33921		2690	14725
055	0400	0406	34000		2701	14723
061	0487	0389 C	34087		2709	14732
061	0743	0344 B	34275		2729	14758
061	0986	0299	34388		2742	14781
061	1236	0263	34464		2751	14808
061	1486	0234 B	34521		2758	14838

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1140 B	32460		2475	14922	0000	00000	3205
0010	1096	32468		2483	14908	0032	00002	3126
0020	1088 B	32457		2484	14906	0063	00006	3123
0030	0948	32484		2510	14857	0093	00014	2880
0050	0786 B	32499		2535	14799	0149	00037	2637
0075	0665	32519		2554	14756	0213	00077	2467
0100	0595 B	32687		2576	14735	0273	00130	2259
0125	0594	33401		2632	14748	0323	00188	1727
0150	0601 B	33708		2655	14759	0364	00245	1510
0175	0588 B	33816		2665	14759	0400	00306	1416
0200	0562 B	33867		2673	14753	0435	00373	1350
0225	0530 B	3389 B		2678	14744	0469	00446	1301
0250	0498 B	33893		2682	14736	0501	00524	1262
0300	0452	33921		2690	14725	0563	00699	1194
0400	0406	34000		2701	14723	0678	01112	1095
0500	0387 C	34099		2711	14733	0785	01600	1009

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0369 C	34181		2719	14743	0883	02154	0936
*0700	0351 B	34249		2726	14753	0974	02764	0874
0800	0333 B	34306		2732	14763	1060	03423	0819
1000	0297	34393		2743	14782	1217	04865	0729
1200	0268	34455		2750	14804	1358	06455	0663
1500	0233 B	34523		2759	14840	1548	09087	0589

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2946	AIR T 11.1	VIS 96
CONS. NO 009	MONTH 6	MXSAMPD 15		WAVES 2 2946	WET B 10.2	STN 009
LAT 49-41 N	DAY 28	NO.DPTH 19		WND-DIR 290	WW-CODE 02	
LON 140-40 W	HR 13.7	W-COLOR		WND-SPD 12	CLD-TPE 6	
MARSD SQ 159		W-TRNSP		BARO 1018.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
137	0000	105 B	32488		2493	14890
137	0010	1026	32457		2495	14882
137	0020	1021 B	32456		2495	14882
137	0030	0996	32447		2499	14875
137	0049	0725 B	32528		2546	14776
137	0074	0592 B	32566		2566	14727
137	0098	0545 B	32662		2580	14714
137	0123	0500	33403		2643	14709
137	0148	0490 B	33652		2664	14712
137	0172		33694			
137	0197	0450 B	33750		2676	14705
137	0246	0411 B	33799		2684	14697
137	0296	0407 B	33877		2691	14705
137	0396	0388	33993		2702	14715
142	0500	0380 C	34101		2711	14730
142	0750	0334	34288		2731	14755
142	1000	0296	34383		2742	14782
142	1250	0258	34465		2752	14808
142	1500	0234 B	34510		2757	14840

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1050 B	32488		2493	14890	0000	00000	3033
0010	1026	32457		2495	14882	0030	00002	3019
0020	1021 B	32456		2495	14882	0061	00006	3014
0030	0996	32447		2499	14875	0091	00014	2983
0050	0716 B	32530		2548	14773	0146	00036	2521
0075	0589 B	3256 B		2567	14726	0207	00075	2342
0100	0541 B	3272 G		2584	14713	0264	00126	2173
0125	0499	3344 B		2646	14709	0312	00180	1592
0150	0489 B	3366 B		2665	14712	0350	00233	1416
0175	0470 B	33701		2670	14709	0385	00291	1366
0200	0447 B	33754		2677	14704	0418	00356	1305
0225	0426 B	3378 B		2681	14700	0451	00426	1264
0250	0410 B	33805		2685	14698	0482	00503	1232
0300	0406 B	33882		2691	14705	0543	00674	1174
0400	0388	33997		2702	14716	0656	01080	1077
0500	0380 C	34101		2711	14730	0761	01563	1000

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0363 C	34187		2720	14741	0858	02111	0926
0700	0344	34258		2727	14751	0949	02712	0860
0800	0326	34311		2733	14760	1033	03361	0808
1000	0296	34383		2742	14782	1189	04800	0735
1200	0265	34451		2750	14803	1331	06398	0663
1500	0234 B	34510		2757	14841	1523	09057	0600

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2944	AIR T 10.2	VIS 97
CONS. NO 010	MONTH 6	MXSAMPD 15		WAVES 2 2945	WET B 09.1	STN 010
LAT 49-49 N	DAY 28	NO.DPTH 19		WND-DIR 290	WW-CODE 02	
LON 142-40 W	HR 22.2	W-COLOR		WND-SPD 12	CLD-TPE 7	
MARSD SQ 159		W-TRNSP		BARO 1023.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
222	0000	105 B	32468		2491	14890
222	0010	1006	32446		2497	14875
222	0019	1002 B	32441		2497	14875
222	0028	0998	32442		2498	14875
222	0047	0805 B	32484		2532	14806
222	0070	0602	32554		2564	14731
222	0094	0544 B	32599		2575	14712
222	0117	0468	33151		2627	14691
222	0141	0410 B	33495		2660	14676
222	0164	0444 B	33731		2675	14697
222	0188	0432 B	33791		2681	14697
222	0235	0432 B	33864		2687	14705
222	0282	0411	33905		2693	14705
222	0381	0388 B	33994		2702	14713
227	0486	0378 C	34110		2712	14727
227	0730	0339	34271		2729	14753
227	0977	0297 B	34378		2741	14778
227	1225	0260	34455		2751	14805
227	1475	0229	34512		2758	14834

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1050 B	32468		2491	14890	0000	00000	3048
0010	1006	32446		2497	14875	0030	00002	2995
0020	1003 B	32441		2497	14875	0061	00006	2996
0030	0983 B	32445		2501	14870	0090	00014	2964
0050	0773 B	32493		2537	14795	0147	00037	2624
0075	0584 C	3254 H		2565	14724	0209	00076	2352
0100	0524 B	3273 I		2587	14706	0266	00127	2146
0125	0442 B	3328 C		2640	14684	0314	00181	1645
0150	0421 C	3360 B		2668	14683	0352	00234	1386
0175	0441 B	3377 D		2679	14698	0385	00290	1283
0200	0432 B	33814		2683	14699	0417	00351	1243
0225	0432 B	33852		2686	14703	0448	00419	1217
0250	0426 B	33879		2689	14706	0479	00493	1193
0300	0405	33920		2694	14706	0538	00659	1145
0400	0386 B	34015		2704	14715	0649	01058	1062
0500	0376 C	34122		2713	14729	0752	01532	0980

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0361 B	3420 B		2721	14740	0848	02072	0915
*0700	0344	34257		2727	14751	0938	02670	0861
0800	0327	34306		2733	14760	1022	03322	0813
1000	0293 B	34386		2742	14780	1178	04760	0730
1200	0263	34448		2750	14802	1320	06352	0663
1500	0226	34516		2758	14837	1510	08979	0587

C-REF-NO 003 YR 1963 DEPTH WAVES 1 2622 AIR T 11.1 VIS 93
 CONS. NO 011 MONTH 7 MXSAMPD 20 WAVES 2 2623 WET B 10.8 STN
 LAT 50-02 N DAY 01 NO.DPTH 20 WND-DIR 260 WW-CODE 47
 LON 144-57 W HR 21.8 W-COLOR 40 WND-SPD 05 CLD-TPE 7
 MARSD SQ 195 W-TRNSP 12 BARO 1024. CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
218	0000	102 B	32543	681 B	2502	14880
218	0010	0979 B	32529	681 B	2508	14866
218	0020	0972 B	32530	697 B	2509	14865
218	0030	0939	32536	704 B	2515	14855
218	0050	0701 B	32574	703 B	2553	14767
218	0075	0535 B	32622	703 B	2578	14705
218	0100	0511 B	32661	706 B	2583	14700
218	0125	0450	33034	623 B	2620	14684
218	0150	0378 B	33452	518 B	2660	14663
218	0175	0356 B	33574	433 B	2672	14659
218	0200	0354 B	33668	368 B	2680	14664
218	0250	0347 B	33780	246 B	2689	14671
218	0300	0354	33873	171 B	2696	14683
218	0400	0370	34015	141 B	2706	14708
225	0495	0356 C	34131	096 B	2716	14720
225	0744	0318	34298	097 B	2733	14747
225	0994	0284	34393	065 B	2744	14776
225	1244	0263		060 B		
225	1495	0227	34512	080 B	2758	14837
225	1995	0196 B	34586	133	2766	14909

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1020 B	32543	681 B	2502	14880	0000	00000	2944
0010	0979 B	32529	681 B	2508	14866	0029	00001	2891
0020	0972 B	32530	697 B	2509	14865	0058	00006	2882
0030	0939	32536	704 B	2515	14855	0087	00013	2828
0050	0701 B	32574	703 B	2553	14767	0140	00035	2468
0075	0535 B	32622	703 B	2578	14705	0200	00072	2236
0100	0511 B	32661	706 B	2583	14700	0255	00122	2183
0125	0450	33034	623 B	2620	14684	0306	00180	1841
0150	0378 B	33452	518 B	2660	14663	0347	00238	1457
0175	0356 B	33574	433 B	2672	14659	0383	00297	1346
0200	0354 B	33668	368 B	2680	14664	0416	00360	1275
0225	0350 B	3373 B	303 B	2685	14667	0447	00429	1225
0250	0347 B	33780	246 B	2689	14671	0478	00503	1188
0300	0354	33873	171 B	2696	14683	0536	00668	1128
0400	0370	34015	141 B	2706	14708	0646	01060	1046

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0355 C	34136	095 B	2717	14720	0746	01523	0948
0600	0340 C	3422 C	088 C	2725	14731	0839	02042	0878
*0700	0325	3428 B	092 B	2731	14742	0925	02616	0824
0800	0310	34323	090 B	2736	14753	1006	03241	0781
1000	0284	34395	065 B	2744	14776	1157	04635	0713
1200	0267	34450	059 B	2750	14803	1297	06211	0665
1500	0234 C	3452 C	075 B	2758	14841	1488	08855	0592
2000	0196 B	34586	134	2767	14910	1771	13915	0521

C-REF-NO 003 YR 1963 DEPTH WAVES 1 3022 AIR T 10.5 VIS 92
 CONS. NO 012 MONTH 7 MXSAMPD 42 WAVES 2 2723 WET B 09.9 STN
 LAT 50-02 N DAY 02 NO.DPTH 7 WND-DIR 300 WW-CODE 47
 LON 145-03 W HR 19.3 W-COLOR 60 WND-SPD 04 CLD-TPE X
 MARSD SQ 195 W-TRNSP 12 BARO 1017. CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
193	0000	102 B	32544	668 B	2502	14880
193	1970	0194	34593	133	2767	14904
193	2467	0172	34627	203	2772	14980
193	2965	0163	34652	263	2774	15062
193	3467	0155	34670	295	2776	15146
193	3976	0153	34676	311	2777	15235
193	4180	0151 B	34676	326	2777	15270

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1020 B	32544	668 B	2502	14880	0000	00000	2943
2000	0192	34596	137	2768	14908	1767	13841	0510
2500	0171	34629	208	2772	14985	2019	19666	0478
3000	0162	34654	266	2774	15068	2259	26492	0464
3500	0155	34671	296	2776	15152	2494	34403	0456
4000	0152	34676	316	2777	15239	2730	43543	0461

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 49X1	AIR T 09.4	VIS 96
CONS. NO 013	MONTH 7	MXSAMPD 15		WAVES 2 2724	WET B 08.4	STN
LAT 50-01 N	DAY 05	NO.DPTH 19		WND-DIR 990	WW-CODE 02	
LON 144-59 W	HR 19.9	W-COLOR 30		WND-SPD 01	CLD-TPE 5	
MARSD SQ 195		W-TRNSP 11		BARO 1012.	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
199	0000	109 B	32555	668 B	2491	14905
199	0010	1025	32526	676 B	2500	14883
199	0020	0974 B	32534	661 B	2509	14866
199	0030	0892	32549	694 B	2524	14837
199	0050	0728 B	32597	694 B	2551	14778
199	0075	0573	32622	695 B	2573	14721
199	0100	0529 B	32644	694 B	2580	14707
199	0125	0460	32986	637 B	2615	14687
199	0150	0386 B	33398	545 B	2655	14666
199	0175	0368 B	33568	461 B	2670	14664
199	0200	0362 B	33654	380 B	2678	14667
199	0250	0349 C	33769	251 B	2688	14671
199	0299	0351	33841	180 B	2694	14681
199	0396	0369	34005	137 B	2705	14707
204	0495	0360 C	34109	101 B	2714	14721
204	0742	0328	34269	076 B	2730	14751
204	0990	0291	34372	062 B	2741	14778
204	1239	0256	34449	067 B	2751	14805
204	1486	0228	34506	083 B	2758	14835

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1090 B	32555	668 B	2491	14905	0000	00000	3050
0010	1025	32526	676 B	2500	14883	0030	00002	2967
0020	0974 B	32534	661 B	2509	14866	0060	00006	2882
0030	0892	32549	694 B	2524	14837	0088	00013	2748
0050	0728 B	32597	694 B	2551	14778	0141	00035	2486
0075	0573	32622	695 B	2573	14721	0201	00073	2279
0100	0529 B	32644	694 B	2580	14707	0257	00123	2216
0125	0460	32986	637 B	2615	14687	0309	00182	1887
0150	0386 B	33398	545 B	2655	14666	0352	00242	1505
0175	0368 B	33568	461 B	2670	14664	0388	00302	1362
0200	0362 B	33654	380 B	2678	14667	0421	00366	1293
0225	0355 B	33719	309 B	2684	14669	0453	00436	1239
0250	0349 C	33769	251 B	2688	14671	0484	00511	1198
0300	0351	33843	179 B	2694	14682	0543	00677	1148
0400	0369	34010	135 B	2705	14708	0654	01073	1048
0500	0359 C	34113	100 B	2714	14722	0756	01542	0969

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0348 C	3419 B	084 B	2722	14734	0850	02076	0507
*0700	0334	34249	077 B	2728	14746	0939	02671	0856
0800	0319	34297	071 B	2733	14757	1024	03320	0812
1000	0290	34376	062 B	2742	14779	1180	04761	0734
1200	0261	34438	065 B	2749	14801	1322	06362	0668
1500	0227	34508	084 B	2758	14837	1514	09013	0593

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2633	AIR T 10.5	VIS 96
CONS. NO 014	MONTH 7	MXSAMPD 19		WAVES 2 2746	WET B 09.9	STN
LAT 49-59 N	DAY 08	NO.DPTH 20		WND-DIR 260	WW-CODE 50	
LON 144-59 W	HR 20.0	W-COLOR 10		WND-SPD 06	CLD-TPE 7	
MARSD SQ 159		W-TRNSP		BARO 1018.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
200	0000	110 B	32547	632 B	2489	14909
200	0009	1052	32523	682 B	2495	14893
200	0018	1043 B	32528	675 B	2497	14891
200	0027	0976	32525	685 B	2508	14868
200	0045	0732 B	32567	706 B	2548	14779
200	0068	0565	32625	699 B	2574	14716
200	0091	0515 B	32642	699 B	2581	14700
200	0114	0462	32879	655 B	2606	14685
200	0137	0408 B	33336	565 B	2648	14672
200	0159	0389 B	33521	497 B	2664	14670
200	0182	0376 B	33633	414 B	2675	14670
200	0228	0360	33750	301 B	2685	14672
200	0273	0350	33812	208 B	2691	14676
200	0365	0364 B	33956	147 B	2701	14699
206	0456	0362	34078	119 B	2711	14715
206	0698	0333 B	34248	075 B	2728	14745
206	0933	0300	34355	062 B	2739	14772
206	1168	0264	34432	059 B	2749	14797
206	1415	0237	34485	077 B	2755	14827
206	1911	0204	34564	116	2764	14898

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1100 B	32547	632 B	2489	14909	0000	00000	3072
0010	1051	32523	682 B	2495	14893	0031	00002	3012
0020	1032 B	32527	676 B	2499	14887	0061	00006	2979
0030	0937 C	32530	689 B	2515	14854	0090	00014	2830
0050	0684 B	32581	706 B	2556	14761	0143	00035	2441
0075	0544 B	3262 E	701 B	2576	14709	0202	00072	2247
0100	0494	32709	687 B	2589	14694	0257	00122	2130
0125	0434	3310 I	614 B	2626	14678	0306	00178	1774
0150	0394 B	3347 D	524 B	2659	14670	0347	00235	1463
0175	0379 B	33605	439 B	2672	14670	0382	00294	1345
0200	0369 B	3369 B	364 B	2680	14670	0415	00357	1272
0225	0361	33745	307 B	2685	14672	0447	00426	1225
0250	0354	33783	252 B	2689	14674	0477	00500	1192
0300	0353 B	33854	179 B	2694	14682	0536	00666	1141
0400	0364	34006	134 B	2705	14706	0646	01060	1047

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0358	3412 B	108 B	2715	14721	0748	01527	0963
0600	0347 B	3420 C	088 B	2722	14734	0842	02058	0902
0700	0333 B	34249	075 B	2728	14745	0931	02650	0854
0800	0319	34300	067 B	2733	14757	1015	03298	0809
1000	0289	34380	060 B	2742	14779	1171	04733	0731
1200	0260	34440	061 B	2750	14800	1312	06328	0666
1500	0228	3451 B	077 B	2758	14838	1504	08980	0596

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2322	AIR T 12.7	VIS 96
CONS. NO 015	MONTH 7	MXSAMPD 15		WAVES 2 2735	WET B 12.2	STN
LAT 49-59 N	DAY 10	NO.DPTH 19		WND-DIR 230	WW-CODE 10	
LON 144-57 W	HR 19.8	W-COLOR		WND-SPD 08	CLD-TPE 7	
MARSD SQ 159		W-TRNSP		BARO 1022.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
198	0000	115 B	32537	653 B	2479	14926
198	0010	1098	32521	675 B	2487	14909
198	0020	1089 B	32526	674 B	2489	14908
198	0030	1017	32532	694 B	2502	14883
198	0049	0704 B	32597	698 B	2554	14769
198	0074	0569	32634	700 B	2575	14719
198	0099	0521 B	32687	722 B	2584	14704
198	0123	0426	33107	603 B	2628	14674
198	0148	0385 B	33472	513 B	2661	14666
198	0173	0379 B	33632	427 B	2674	14670
198	0197	0367 B	33687	364 B	2680	14669
198	0247	0366	33792	271 B	2688	14679
198	0298	0359	33857	199 B	2694	14685
198	0400	0363	34001	124 B	2705	14705
204	0499	0356	34126	106 B	2716	14720
204	0748	0322	34292	075 B	2732	14749
204	0997	0287 B	34391	064 B	2743	14777
204	1246	0255	34458	062 B	2751	14806
204	1495	0227	34516	092	2758	14837

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1150 B	32537	653 B	2479	14926	0000	00000	3165
0010	1098	32521	675 B	2487	14909	0031	00002	3090
0020	1089 B	32526	674 B	2489	14908	0062	00006	3074
0030	1017	32532	694 B	2502	14883	0093	00014	2953
0050	0695 B	32599	698 B	2556	14765	0147	00036	2442
0075	0567	3263 B	702 B	2575	14718	0206	00073	2265
0100	0517 B	3270 B	718 B	2586	14703	0262	00123	2159
0125	0421	33141	595 B	2631	14673	0311	00179	1731
0150	0384 B	33491	506 B	2662	14666	0351	00235	1434
0175	0378 B	33638	421 B	2675	14670	0385	00292	1319
0200	0367 B	33694	357 B	2680	14670	0418	00355	1268
0225	0365 B	33749	307 B	2685	14674	0449	00424	1226
0250	0366	33796	266 B	2689	14679	0480	00498	1194
0300	0359	33860	197 B	2694	14685	0539	00664	1143
0400	0363	34001	124 B	2705	14705	0649	01059	1049
0500	0356	34127	106 B	2716	14721	0751	01525	0955

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0344	3421 C	091 B	2724	14733	0844	02049	0888
*0700	0330	3427 B	079 B	2730	14744	0931	02630	0835
0800	0315	34317	072 B	2735	14755	1013	03263	0792
1000	0287 B	34392	064 B	2743	14778	1166	04671	0719
1200	0261	34447	061 B	2750	14801	1306	06248	0661
1500	0226	34517	093	2759	14837	1495	08870	0587

C-REF-NO 003 YR 1963 DEPTH WAVES 1 2522 AIR T 12.2 VIS 97
 CONS. NO 016 MONTH 7 MXSAMPD 04 WAVES 2 2724 WET B 11.1 STN
 LAT 49-59 N DAY 12 NO.DPTH 14 WND-DIR 250 WW-CODE 01
 LON 144-53 W HR 19.8 W-COLOR 60 WND-SPD 06 CLD-TPE 8
 MARSD SQ 159 W-TRNSP 08 BARO 1022. CLD-AMT 4 HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND

198	0000	116 B	32522	628 B	2476	14930
198	0010	1124	32506	675 B	2481	14918
198	0020	1113 B	32506	690 B	2483	14916
198	0030	1044	32571	690 B	2500	14894
198	0050	0770 B	32586	700 B	2545	14794
198	0074	0568	32744	699 B	2583	14720
198	0099	0523 B	32771	708 B	2591	14706
198	0124	0410	33254	596 B	2641	14670
198	0149	0376 B	33474	501 B	2662	14662
198	0174	0394 B	33659	429 B	2675	14677
198	0199	0405 B	33786	356 B	2684	14687
198	0248	0389	33832	270 B	2689	14689
198	0298	0374	33898	187 B	2696	14692
198	0397	0376	34039	149 B	2707	14711

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1160 B	32522	628 B	2476	14930	0000	00000	3193
0010	1124	32506	675 B	2481	14918	0032	00002	3145
0020	1113 B	32506	690 B	2483	14916	0063	00006	3129
0030	1044	32571	690 B	2500	14894	0094	00014	2968
0050	0770 B	32586	700 B	2545	14794	0150	00037	2550
0075	0565	3274 B	700 B	2583	14719	0209	00074	2181
0100	0518 B	3279 B	705 B	2593	14705	0263	00122	2096
0125	0407	33266	592 B	2642	14669	0310	00176	1624
0150	0376 B	33482	498 B	2663	14663	0348	00230	1432
0175	0395 B	33665	426 B	2675	14677	0383	00287	1315
0200	0405 B	33788	354 B	2684	14687	0415	00349	1235
0225	0400 B	3383 F	305 B	2688	14690	0446	00416	1203
0250	0388	33834	266 B	2689	14689	0476	00489	1188
0300	0376	3390 B	194 C	2696	14693	0534	00654	1133
0400	0376	34044	149 B	2707	14712	0644	01044	1031

C-REF-NO 003	YR 1963	DEPTH	WAVES 1 34XX	AIR T 10.0	VIS 96
CONS. NO 017	MONTH 7	MXSAMPD 20	WAVES 2 27XX	WET B 09.4	STN
LAT 49-56 N	DAY 15	NO.DPTH 20	WND-DIR 340	WW-CODE 01	
LON 144-57 W	HR 19.6	W-COLOR 40	WND-SPD 02	CLD-TPE 7	
MARSD SQ 159		W-TRNSP 10	BARO 1022.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
196	0000	114 B	32498	669 B	2478	14922
196	0010	1122	32482	678 B	2480	14917
196	0020	0908 B	32541	704 B	2520	14842
196	0030	0778	32577	699 B	2543	14794
196	0050	0596 B	32647	700 B	2572	14726
196	0075	0546	32661	705 B	2579	14710
196	0100	0508 B	32726	696 B	2589	14700
196	0125	0393	33217	585 B	2640	14662
196	0150	0365 B	33460	503 B	2662	14658
196	0175	0363 B	33579	440 B	2672	14663
196	0200	0374 B	33674	365 B	2678	14673
196	0250	0364	33781	264 B	2688	14678
196	0300	0360	33867	197 B	2695	14686
196	0400	0372	34017	145 B	2706	14709
201	0500	0359	34123	113 B	2715	14722
201	0750	0324 B	34285	075 B	2731	14751
201	1000	0290	34385	068	2743	14779
201	1250	0255	34459	067 B	2752	14807
201	1500	0228	34510	084 B	2758	14838
201	2000	0195	34594	137	2767	14909

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1140 B	32498	669 B	2478	14922	0000	00000	3177
0010	1122	32482	678 B	2480	14917	0032	00002	3160
0020	0908 B	32541	704 B	2520	14842	0062	00006	2776
0030	0778	32577	699 B	2543	14794	0089	00013	2565
0050	0596 B	32647	700 B	2572	14726	0137	00033	2285
0075	0546	32661	705 B	2579	14710	0194	00069	2219
0100	0508 B	32726	696 B	2589	14699	0249	00118	2131
0125	0393	33217	585 B	2640	14662	0296	00172	1646
0150	0365 B	33460	503 B	2662	14658	0335	00226	1438
0175	0363 B	33579	440 B	2672	14662	0370	00285	1349
0200	0374 B	33674	365 B	2678	14673	0404	00349	1290
0225	0371 B	3374 B	308 B	2683	14676	0435	00418	1243
0250	0364	33781	264 B	2688	14678	0466	00493	1204
0300	0360	33867	197 B	2695	14686	0525	00660	1139
0400	0372	34017	145 B	2706	14709	0636	01054	1046

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0359	34123	113 B	2715	14722	0737	01520	0961
0600	0345	3420 B	092 B	2723	14734	0831	02049	0897
0700	0331 B	34261	079 B	2729	14745	0919	02636	0844
0800	0317 B	34309	072 B	2734	14756	1002	03276	0801
1000	0290	34385	068	2743	14779	1157	04701	0727
1200	0262	34446	066 B	2750	14801	1297	06289	0663
1500	0228	34510	084 B	2758	14838	1489	08931	0593
2000	0195	34594	137	2767	14910	1770	13962	0515

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 32XX	AIR T 12.7	VIS 97
CONS. NO 018	MONTH 7	MXSAMPD 42		WAVES 2 27XX	WET B 11.6	STN
LAT 50-02 N	DAY 16	NO.DPTH 7		WND-DIR 320	WW-CODE 02	
LON 145-01 W	HR 00.1	W-COLOR		WND-SPD 04	CLD-TPE 6	
MARSD SQ 195		W-TRNSP		BARO 1023.	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
001	0000	117 B	32517	668 B	2474	14933
001	2000	0196	34588	139	2767	14910
001	2500	0177	34629	201	2771	14988
001	3000	0161	34656	251	2775	15067
001	3500	0155	34673	290	2777	15152
001	4000	0151 B	34683	321	2778	15239
001	4200	0151	34684	332	2778	15274

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1170 B	32517	668 B	2474	14933	0000	00000	3214
2000	0196	34588	139	2767	14910	1772	13992	0521
2500	0177	34629	201	2771	14988	2028	19919	0485
3000	0161	34656	251	2775	15068	2269	26767	0461
3500	0155	34673	290	2777	15152	2503	34636	0455
4000	0151 B	34683	321	2778	15239	2737	43697	0455

C-REF-NO 003 YR 1963 DEPTH WAVES 1 2623 AIR T 11.1 VIS 96
 CONS. NO 019 MONTH 7 MXSAMPD 04 WAVES 2 2623 WET B 10.5 STN
 LAT 50-00 N DAY 17 NO.DPTH 14 WND-DIR 260 WW-CODE 01
 LON 145-00 W HR 19.8 W-COLOR 40 WND-SPD 08 CLD-TPE 7
 MARSD SQ 195 W-TRNSP 10 BARO 1021. CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
198	0000	119 B	32522	635 B	2471	14940
198	0010	1152	32499	699 B	2476	14928
198	0020	1140 B	32499	711 B	2478	14925
198	0030	0919	32545	723 B	2519	14847
198	0050	0715 B	32591	704 B	2553	14773
198	0075	0553 B	32648	704 B	2578	14713
198	0100	0517 B	32672	700 B	2584	14703
198	0125	0417	33146	617 B	2632	14671
198	0150	0370 B	33528	487 B	2667	14661
198	0175	0369 B	33647	396 B	2676	14666
198	0200	0370 B	33710	338 B	2681	14671
198	0250	0373	33805	260 B	2689	14682
198	0300	0375	33890	197 B	2695	14692
198	0400	0374	34012	147	2705	14710

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1190 B	32522	635 B	2471	14940	0000	00000	3246
0010	1152	32499	699 B	2476	14928	0032	00002	3199
0020	1140 B	32499	711 B	2478	14925	0064	00007	3180
0030	0919	32545	723 B	2519	14847	0094	00014	2791
0050	0715 B	32591	704 B	2553	14773	0147	00036	2474
0075	0553 B	32648	704 B	2578	14713	0207	00073	2237
0100	0517 B	32672	700 B	2584	14702	0262	00123	2181
0125	0417	33146	617 B	2632	14671	0311	00179	1723
0150	0370 B	33528	487 B	2667	14661	0351	00234	1392
0175	0369 B	33647	396 B	2676	14666	0385	00290	1303
0200	0370 B	33710	338 B	2681	14671	0417	00352	1259
0225	0371 B	33761	295 B	2685	14677	0448	00421	1224
0250	0373	33805	260 B	2689	14682	0479	00495	1194
0300	0375	33890	197 B	2695	14692	0538	00660	1137
0400	0374	34012	147	2705	14710	0648	01055	1052

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 49XX	AIR T 12.7	VIS 97
CONS. NO 020	MONTH 7	MXSAMPD 20		WAVES 2 3122	WET B 11.1	STN
LAT 50-00 N	DAY 23	NO.DPTH 20		WND-DIR 990	WW-CODE 01	
LON 145-00 W	HR 18.9	W-COLOR 50		WND-SPD 01	CLD-TPE 8	
MARSD SQ 195		W-TRNSP 10		BARO 1019.	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
189	0000	117 B	32553	660 B	2477	14933
189	0010	1140	32495	647 B	2478	14924
189	0020	1136 B	32495	663 B	2478	14924
189	0030	0932	32626	694 B	2523	14853
189	0050	0690 B	32684	694 B	2563	14764
189	0075	0580	32651	699 B	2575	14724
189	0100	0516 B	32770	703 B	2591	14703
189	0125	0432	33190	602 B	2634	14678
189	0150	0376 B	33475	513 B	2662	14663
189	0175	0374 B	33594	434 B	2672	14667
189	0200	0365 B	33688	346 B	2680	14669
189	0250	0358	33776	254 B	2688	14675
189	0300	0363	33856	202 B	2694	14687
189	0400	0369	33996	144 B	2704	14708
195	0500	0356	34110	104 B	2714	14720
195	0750	0323 B	34282	079	2731	14750
195	1000	0288	34375	075	2742	14778
195	1250	0255	34452	063 B	2751	14807
195	1500	0226	34502	081 B	2757	14837
195	2000	0198	34573	127 B	2765	14910

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1170 B	32553	660 B	2477	14933	0000	00000	3188
0010	1140	32495	647 B	2478	14924	0032	00002	3181
0020	1136 B	32495	663 B	2478	14924	0064	00007	3176
0030	0932	32626	694 B	2523	14853	0094	00014	2751
0050	0690 B	32684	694 B	2563	14764	0145	00035	2372
0075	0580	32651	699 B	2575	14724	0204	00072	2266
0100	0516 B	32770	703 B	2591	14703	0259	00121	2107
0125	0432	33190	602 B	2634	14678	0307	00176	1705
0150	0376 B	33475	513 B	2662	14662	0346	00231	1438
0175	0374 B	33594	434 B	2672	14667	0381	00290	1348
0200	0365 B	33688	346 B	2680	14669	0414	00353	1271
0225	0360 B	3374 C	291 B	2685	14672	0446	00422	1228
0250	0358	33776	254 B	2688	14675	0476	00496	1201
0300	0363	33856	202 B	2694	14687	0536	00663	1150
0400	0369	33996	144 B	2704	14708	0647	01062	1059

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0356	34110	104 B	2714	14720	0750	01533	0968
0600	0343	3419 B	086 B	2722	14732	0844	02064	0900
0700	0330 B	34257	079	2729	14744	0932	02652	0845
0800	0316 B	34304	078	2734	14756	1015	03293	0802
1000	0288	34375	075	2742	14778	1171	04725	0733
1200	0261	34438	065 B	2749	14801	1313	06326	0668
1500	0226	34502	081 B	2757	14837	1505	08987	0597
2000	0198	34573	127 B	2765	14911	1792	14131	0534

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 2222	AIR T 12.2	VIS 97
CONS. NO 021	MONTH 7	MXSAMPD 04		WAVES 2 2734	WET B 11.1	STN
LAT 50-10 N	DAY 24	NO.DPTH 14		WND-DIR 220	WW-CODE 02	
LON 144-54 W	HR 19.6	W-COLOR 40		WND-SPD 04	CLD-TPE 6	
MARSD SQ 195		W-TRNSP 09		BARO 1023.	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
196	0000	122 B	32523	675 B	2465	14950
196	0010	1157	32494	680 B	2475	14930
196	0020	1142 B	32496	675 B	2477	14926
196	0030	0874	32543	698 B	2526	14830
196	0050	0643 B	32621	729 B	2564	14745
196	0075	0568	32646	700 B	2576	14719
196	0100	0504 B	32775	684 B	2593	14699
196	0125	0403	33295	577 B	2645	14667
196	0150	0398 B	33534	497 B	2665	14673
196	0175	0389 B	33627	437 B	2673	14674
196	0200	0377 B	33684	364 B	2679	14674
196	0250	0371	33794	258 B	2688	14681
196	0300	0371	33874	200 B	2694	14690
196	0400	0378 B	34006	151 B	2704	14712

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1220 B	32523	675 B	2465	14950	0000	00000	3299
0010	1157	32494	680 B	2475	14930	0033	00002	3211
0020	1142 B	32496	675 B	2477	14926	0065	00007	3186
0030	0874	32543	698 B	2526	14830	0095	00014	2726
0050	0643 B	32621	729 B	2564	14745	0146	00035	2360
0075	0568	32646	700 B	2576	14719	0204	00072	2256
0100	0504 B	32775	684 B	2593	14698	0259	00121	2090
0125	0403	33295	577 B	2645	14667	0305	00173	1597
0150	0398 B	33534	497 B	2665	14673	0343	00227	1415
0175	0389 B	33627	437 B	2673	14674	0378	00284	1338
0200	0377 B	33684	364 B	2679	14674	0411	00348	1285
0225	0372 B	33741	305 B	2684	14677	0442	00417	1239
0250	0371	33794	258 B	2688	14681	0473	00492	1201
0300	0371	33874	200 B	2694	14690	0532	00659	1144
0400	0378 B	34006	151 B	2704	14712	0644	01057	1061

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 3022	AIR T 10.5	VIS 97
CONS. NO 022	MONTH 7	MXSAMPD 15	WAVES 2 2725	WET B 09.4	STN	
LAT 49-57 N	DAY 26	NO.DPTH 19	WND-DIR 300	WW-CODE 01		
LON 144-55 W	HR 19.9	W-COLOR 40	WND-SPD 05	CLD-TPE 6		
MARSD SQ 159		W-TRNSP 08	BARO 1033.	CLD-AMT 6	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
199	0000	124 B	32502	651 B	2460	14957
199	0010	1201	32494	656 B	2466	14945
199	0020	1154 B	32490	667 B	2475	14930
199	0030	0920	32548	705 B	2519	14848
199	0050	0774 B	32564	706 B	2542	14796
199	0075	0627 B	32621	690 B	2566	14742
199	0100	0551 B	32670		2579	14716
199	0125	0453	33122	614 B	2626	14686
199	0150	0403 B	33482	528 B	2660	14674
199	0175	0391 B	33657	412 B	2675	14675
199	0200	0379 B	33717	347 B	2681	14675
199	0250	0367	33788	266 B	2688	14679
199	0300	0363	33855	207 B	2694	14687
199	0400	0370	34011	142 B	2705	14708
204	0500	0358	34112	111 B	2714	14721
204	0750	0323 B	34290	080 B	2732	14750
204	1000	0288 B	34385	078 B	2743	14778
204	1250	0256	34455	064 B	2751	14807
204	1500	0227	32508	081 B	2598	14810

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1240 B	32502	651 B	2460	14957	0000	00000	3350
0010	1201	32494	656 B	2466	14945	0033	00002	3288
0020	1154 B	32490	667 B	2475	14930	0066	00007	3211
0030	0920	32548	705 B	2519	14848	0096	00014	2790
0050	0774 B	32564	706 B	2542	14796	0150	00036	2572
0075	0627 B	32621	690 B	2566	14742	0212	00075	2344
0100	0551 B	32670	664 B	2579	14716	0269	00127	2221
0125	0453	33122	614 B	2626	14686	0320	00184	1778
0150	0403 B	33482	528 B	2660	14674	0361	00241	1459
0175	0391 B	33657	412 B	2675	14675	0396	00299	1318
0200	0379 B	33717	347 B	2681	14675	0428	00362	1263
0225	0372 B	3376 B	301 B	2685	14677	0459	00430	1227
0250	0367	33788	266 B	2688	14679	0490	00505	1201
0300	0363	33855	207 B	2694	14687	0549	00672	1151
0400	0370	34011	142 B	2705	14708	0660	01068	1049
0500	0358	34112	111 B	2714	14721	0762	01537	0968

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0344	34195	093 B	2722	14733	0857	02069	0900
0700	0330 B	34262	082 B	2729	14745	0945	02656	0842
0800	0316 B	34313	079 B	2734	14756	1027	03293	0796
1000	0288 B	34385	078 B	2743	14778	1181	04712	0725
1200	0262	3452 I	066 B	2756	14802	1316	06228	0607
1500	0227	32508	081 B	2598	14810	1723	12222	2066

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 29XX	AIR T 13.3	VIS 97
CONS. NO 023	MONTH 7	MXSAMPD 20		WAVES 2 27XX	WET B 12.2	STN
LAT 49-59 N	DAY 29	NO.DPTH 20		WND-DIR 290	WW-CODE 02	
LON 144-48 W	HR 19.7	W-COLOR 40		WND-SPD 03	CLD-TPE 8	
MARSD SQ 159		W-TRNSP 09		BARO 1027.	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
197	0000	128 B	32503	663 B	2452	14971
197	0010	1239	32500	655 B	2460	14958
197	0020	1164 B	32501	672 B	2474	14934
197	0030	0942	32535	696 B	2515	14856
197	0050	0700 B	32590	685 B	2554	14767
197	0075	0584	32642	693 B	2573	14725
197	0100	0510 B	32692	696 B	2586	14700
197	0125	0433	33127	608 B	2629	14678
197	0150	0380 B	33502	492 B	2664	14665
197	0175	0388 B	33645	422 B	2674	14674
197	0200	0380 B	33695	362 B	2679	14675
197	0250	0372	33783	273 B	2687	14681
197	0300	0373	33881	207 B	2695	14691
197	0399	0374	34009	148 B	2705	14710
202	0500	0360	34115	109 B	2714	14722
202	0750	0325	34288	072 B	2732	14751
202	1000	0288 B	34389	061 B	2743	14778
202	1250	0251	34463	066 B	2752	14805
202	1500	0225	34509	095	2758	14837
202	2000	0198	34577	129	2766	14911

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1280 B	32503	663 B	2452	14971	0000	00000	3423
0010	1239	32500	655 B	2460	14958	0034	00002	3352
0020	1164 B	32501	672 B	2474	14934	0067	00007	3220
0030	0942	32535	696 B	2515	14856	0098	00014	2833
0050	0700 B	32590	685 B	2554	14767	0151	00036	2455
0075	0584	32642	693 B	2573	14725	0210	00074	2277
0100	0510 B	32692	696 B	2586	14700	0266	00124	2159
0125	0433	33127	608 B	2629	14678	0315	00180	1754
0150	0380 B	33502	492 B	2664	14665	0355	00236	1421
0175	0388 B	33645	422 B	2674	14674	0390	00293	1324
0200	0380 B	33695	362 B	2679	14675	0423	00356	1280
0225	0375 B	33739	313 B	2683	14678	0455	00426	1243
0250	0372	33783	273 B	2687	14681	0485	00501	1210
0300	0373	33881	207 B	2695	14691	0545	00668	1141
0400	0374	34010	148 B	2705	14710	0655	01064	1053

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0360	34115	109 B	2714	14722	0758	01533	0968
0600	0346	34196	088 B	2722	14734	0852	02065	0901
0700	0332	34261	075 B	2729	14745	0940	02654	0845
0800	0318	34312	068 B	2734	14757	1023	03293	0798
1000	0288 B	34389	061 B	2743	14778	1177	04711	0722
1200	0258	34450	063 B	2751	14800	1317	06284	0656
1500	0225	34509	095	2758	14837	1506	08907	0591
2000	0198	34577	129	2766	14911	1791	14011	0531

-REF-NO 003	YR 1963	DEPTH		WAVES 1 29XX	AIR T		VIS 91
ONS. NO 024	MONTH 7	MXSAMPD	41	WAVES 2 29XX	WET B		STN
AT 50-00 N	DAY 30	NO.DPTH	7	WND-DIR 290	WW-CODE	41	
ON 145-00 W	HR 00.5	W-COLOR		WND-SPD 09	CLD-TPE	6	
ARSD SQ 195		W-TRNSP		BARO 1028.	CLD-AMT	8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
005	0000	129 B	32505	653 B	2450	14974
005	1908	0199	34568	123 B	2765	14895
005	2403	0181	34616	186	2770	14973
005	2906	0163	34644	248	2774	15052
005	3447	0156	34662	288 B	2776	15143
005	3915	0152	34674	321	2777	15224
005	4116	0152	34675	331	2777	15260

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1290 B	32505	653 B	2450	14974	0000	00000	3440
2000	0195	34579	134 B	2766	14909	1790	13986	0526
2500	0177	34623	199	2771	14988	2049	19975	0490
3000	0161	34648	256	2774	15068	2293	26903	0467
3500	0155	34664	292 B	2776	15153	2531	34887	0462
4000	0152	34674	325	2777	15239	2768	44100	0463

C-REF-NO 003 YR 1963 DEPTH WAVES 1 22X0 AIR T 13.3 VIS 0
 CONS. NO 025 MONTH 7 MXSAMPD 15 WAVES 2 22X1 WET B 13.3 STN
 LAT 50-03 N DAY 31 NO.DPTH 19 WND-DIR 220 WW-CODE 45
 LON 144-57 W HR 19.7 W-COLOR 40 WND-SPD 02 CLD-TPE X
 MARSD SQ 195 W-TRNSP 10 BARO 1023. CLD-AMT X HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
197	0000	136 B	32496	645 B	2436	14998
197	0010	1254	32503	664 B	2457	14964
197	0020	1205 B	32498	677 B	2466	14948
197	0030	0972	32538	682 B	2510	14867
197	0050	0746 B	32591	719 B	2548	14785
197	0075	0594 B	32646	696 B	2572	14730
197	0100	0515 B	32762	688 B	2591	14703
197	0150	0388	33538	488 B	2666	14668
197	0175	0394 B	33637	437 B	2673	14676
197	0200	0384 B	33717	361 B	2680	14677
197	0225	0376 B	33760	302 B	2685	14679
197	0250	0374	33794	265 B	2688	14682
197	0300	0364	33861	217 B	2694	14687
197	0400	0372	33999	145 B	2704	14709
202	0484	0360	34105	112 B	2714	14719
202	0731	0327	34275	074 B	2730	14749
202	0980	0292	34375	067 B	2742	14776
202	1228	0258		069 B		
202	1477	0228	34522	081 B	2759	14834

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1360 B	32496	645 B	2436	14998	0000	00000	3579
0010	1254	32503	664 B	2457	14964	0035	00002	3377
0020	1205 B	32498	677 B	2466	14948	0068	00007	3295
0030	0972	32538	682 B	2510	14867	0100	00015	2878
0050	0746 B	32591	719 B	2548	14785	0154	00037	2514
0075	0594 B	32646	696 B	2572	14729	0214	00075	2286
0100	0515 B	32762	688 B	2591	14703	0270	00124	2112
0125	0437 C	3315 I	595 F	2630	14680	0318	00180	1739
0150	0388	33538	488 B	2666	14668	0358	00235	1402
0175	0394 B	33637	437 B	2673	14676	0392	00292	1336
0200	0384 B	33717	361 B	2680	14677	0425	00355	1267
0225	0376 B	33760	302 B	2685	14679	0456	00424	1229
0250	0374	33794	265 B	2688	14682	0487	00499	1204
0300	0364	33861	217 B	2694	14687	0546	00666	1147
0400	0372	33999	145 B	2704	14709	0658	01064	1060
0500	0358	34120	108 B	2715	14721	0760	01533	0962

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0344	3420 C	087 B	2723	14733	0853	02061	0894
*0700	0331	3426 B	076 B	2729	14745	0941	02647	0843
0800	0317	34307	070 B	2734	14756	1024	03288	0802
1000	0289	3440 E	067 B	2744	14779	1178	04703	0718
1200	0262	3447 D	068 B	2752	14801	1317	06263	0648
1500	0225	34525	083 B	2759	14837	1503	08845	0580

C-REF-NO 003 YR 1963 DEPTH WAVES 1 30X3 AIR T 12.7 VIS
 CONS. NO 026 MONTH 8 MXSAMPD 15 WAVES 2 2933 WET B 12.2 STN 010
 LAT 49-51 N DAY 02 NO.DPTH 19 WND-DIR 300 WW-CODE 02
 LON 142-40 W HR 14.8 W-COLOR WND-SPD 07 CLD-TPE 7
 MARSD SQ 159 W-TRNSP BARO 1021. CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
148	0000	132 B	32421		2438	14983
148	0010	1294	32409		2442	14976
148	0019	1276 B	32410		2446	14971
148	0029	1130	32415		2473	14922
148	0048	0870 B	32461		2520	14831
148	0072	0619	32532		2560	14738
148	0096	0552 B	32660		2579	14716
148	0120	0474	33034		2617	14693
148	0144	0426 B	33370		2649	14681
148	0169	0407 B	33541		2664	14680
148	0193	0410 B	33682		2675	14687
148	0242	0391 B	33812		2687	14689
148	0292	0386 B	33887		2694	14696
148	0391	0388	34021		2704	14715
153	0492	0371	34106		2713	14725
153	0738	0332 C	34279		2730	14752
153	0987	0292	34378		2742	14778
153	1237	0254	34454		2751	14804
153	1488	0228	34505		2757	14836

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1320 B	32421		2438	14983	0000	00000	3558
0010	1294	32409		2442	14976	0036	00002	3520
0020	1264 B	32410		2448	14968	0071	00007	3467
0030	1115	32417		2476	14917	0104	00016	3201
0050	0844 B	32466		2524	14821	0164	00040	2743
0075	0606 B	3254 B		2563	14733	0228	00080	2379
0100	0538 B	3272 C		2585	14712	0286	00131	2173
0125	0462	3311 B		2625	14689	0336	00188	1794
0150	0419 B	3342 C		2653	14680	0377	00247	1521
0175	0407 B	33580		2667	14681	0414	00308	1392
0200	0408 B	3371 B		2677	14687	0448	00373	1298
0225	0399 B	3378 C		2684	14689	0480	00442	1235
0250	0390 B	33826		2689	14689	0511	00517	1195
0300	0386 B	33899		2695	14697	0569	00683	1141
0400	0387	34030		2705	14716	0680	01079	1052
0500	0370	34113		2713	14726	0783	01551	0980

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0354 B	34190		2721	14737	0878	02090	0914
*0700	0338 C	34256		2728	14748	0968	02686	0855
0800	0322 B	34308		2734	14758	1052	03332	0806
1000	0290	34383		2742	14779	1207	04763	0729
1200	0259	34444		2750	14800	1348	06351	0661
1500	0227	34507		2758	14837	1539	08993	0595

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 30XX	AIR T 14.9	VIS 98
CONS. NO 027	MONTH 8	MXSAMPD 15		WAVES 2 30XX	WET B 14.1	STN 009
LAT 49-41 N	DAY 02	NO.DPTH 19		WND-DIR 300	WW-CODE 02	
LON 140-40 W	HR 22.8	W-COLOR 30		WND-SPD 08	CLD-TPE 6	
MARSD SQ 159		W-TRNSP 09		BARO 1020.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
228	0000	139 B	32441		2425	15007
228	0010	1350	32438		2433	14995
228	0020	1200 B	32445		2463	14946
228	0030	0990	32483		2503	14873
228	0050	0837 B	32534		2531	14820
228	0075	0674	32566		2556	14761
228	0100	0583 B	32693		2577	14730
228	0125	0488	33273		2634	14703
228	0150	0464 B	33522		2657	14700
228	0175	0454 B	33653		2668	14702
228	0200	0447 B	33737		2676	14704
228	0250	0437 B	33823		2683	14709
228	0300	0388	33858		2691	14697
228	0400	0390	34002		2703	14717
233	0496	0374 B	34093		2711	14727
233	0746	0335	34271		2729	14754
233	0995	0296	34373		2741	14781
233	1245	0260	34445		2750	14808
233	1497	0228	34502		2757	14837

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1390 B	32441		2425	15007	0000	00000	3677
0010	1350	32438		2433	14995	0037	00002	3605
0020	1200 B	32445		2463	14946	0071	00007	3325
0030	0990	32483		2503	14873	0103	00015	2946
0050	0837 B	32534		2531	14820	0160	00038	2682
0075	0674	32566		2556	14761	0224	00079	2443
0100	0583 B	32693		2577	14730	0283	00132	2241
0125	0488	33273		2634	14703	0333	00188	1702
0150	0464 B	33522		2657	14700	0373	00244	1492
0175	0454 B	33653		2668	14702	0409	00305	1385
0200	0447 B	33737		2676	14704	0443	00370	1317
0225	0444 B	3379 B		2680	14708	0476	00441	1277
0250	0437 B	33823		2683	14709	0508	00519	1247
0300	0388	33858		2691	14697	0569	00691	1174
0400	0390	34002		2703	14717	0682	01096	1076
0500	0373 B	34096		2712	14727	0787	01578	0996

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0358 B	34177		2720	14738	0884	02125	0927
*0700	0342	34244		2727	14749	0975	02730	0868
0800	0326	34298		2732	14760	1060	03387	0819
1000	0295	34375		2741	14781	1218	04840	0741
1200	0266	34434		2749	14803	1361	06460	0677
1500	0228	34503		2757	14838	1555	09141	0599

C-REF-NO 003	YR 1963	DEPTH	WAVES 1 3421	AIR T 13.8	VIS 93
CONS. NO 028	MONTH 8	MXSAMPD 15	WAVES 2 3022	WET B 13.8	STN 008
LAT 49-37 N	DAY 03	NO.DPTH 19	WND-DIR 340	WW-CODE 45	
LON 138-40 W	HR 05.6	W-COLOR	WND-SPD 06	CLD-TPE	
MARSD SQ 158		W-TRNSP	BARO 1016.	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
056	0000	145 B	32410		2411	15026
056	0010	1386	32416		2424	15007
056	0020	1301 B	32432		2443	14980
056	0030	1067	32448		2487	14900
056	0050	0787 B	32483		2534	14800
056	0075	0748	32484		2540	14789
056	0100	0683 B	32660		2562	14769
056	0125	0615	33160		2610	14753
056	0150	0572 B	33537		2645	14745
056	0175	0616 B	33819		2662	14770
056	0200	0606 B	33886		2669	14771
056	0250	0541	33909		2679	14753
056	0300	0484	33912		2685	14738
056	0400	0451	34013		2697	14742
060	0500	0399	34076		2707	14738
060	0750	0346 B	34251		2727	14759
060	1000	0304	34362		2739	14785
060	1250	0264	34448		2750	14811
060	1500	0228	34502		2757	14838

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1450 B	32410		2411	15026	0000	00000	3819
0010	1386	32416		2424	15007	0038	00002	3690
0020	1301 B	32432		2443	14980	0074	00007	3519
0030	1067	32448		2487	14900	0107	00016	3097
0050	0787 B	32483		2534	14800	0165	00039	2650
0075	0748	32484		2540	14789	0231	00081	2600
0100	0683 B	32660		2562	14769	0294	00137	2388
0125	0615	33160		2610	14753	0348	00199	1933
0150	0572 B	33537		2645	14745	0393	00261	1602
0175	0616 B	33819		2662	14770	0431	00325	1449
0200	0606 B	33886		2669	14771	0467	00394	1389
0225	0577 B	3391 C		2674	14764	0501	00469	1340
0250	0541	33909		2679	14753	0535	00550	1300
0300	0484	33912		2685	14738	0599	00730	1237
0400	0451	34013		2697	14742	0718	01157	1134
0500	0399	34076		2707	14738	0828	01662	1039

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0371 B	3415 B		2716	14744	0929	02232	0962
0700	0352 B	34218		2723	14753	1023	02858	0898
0800	0337 B	34277		2730	14764	1111	03537	0846
1000	0304	34362		2739	14785	1274	05033	0760
1200	0272	34433		2748	14805	1420	06681	0684
1500	0228	34502		2757	14838	1615	09376	0599

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 10XX	AIR T 14.9	VIS
CONS. NO 029	MONTH 8	MXSAMPD	25	WAVES 2 49XX	WET B 14.4	STN C07
LAT 49-26 N	DAY 03	NO.DPTH	21	WND-DIR 100	WW-CODE 41	
LON 136-40 W	HR 12.6	W-COLOR		WND-SPD 06	CLD-TPE 6	
MARSD SQ 158		W-TRNSP		BARO 1018.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
126	0000	147 B	32403		2406	15032
126	0010	1422	32457		2420	15019
126	0020	1342 B	32468		2437	14995
126	0030	1232	32460		2458	14959
126	0050	0798 B	32472		2532	14804
126	0075	0764	32502		2539	14795
126	0100	0717 B	32524		2547	14781
126	0125	0636	32939		2590	14758
126	0150	0565 B	33438		2638	14741
126	0175	0552 B	33710		2661	14743
126	0200	0550 B	33814		2670	14748
126	0250	0498	33862		2680	14735
126	0300	0459	33896		2687	14728
126	0400	0415 B	33949		2696	14727
132	0500	0389	34073		2708	14734
132	0750	0342	34262		2728	14758
132	1000	0304	34372		2740	14785
132	1250	0264	34443		2749	14810
132	1500	0232	34502		2757	14840
132	2000	0196	34586		2766	14910
132	2500	0170	34631		2772	14985

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1470 B	32403		2406	15032	0000	00000	3864
0010	1422	32457		2420	15019	0038	00002	3731
0020	1342 B	32468		2437	14995	0075	00008	3570
0030	1232	32460		2458	14959	0110	00016	3373
0050	0798 B	32472		2532	14804	0171	00041	2674
0075	0764	32502		2539	14795	0237	00083	2608
0100	0717 B	32524		2547	14781	0302	00141	2533
0125	0636	32939		2590	14758	0360	00208	2123
0150	0565 B	33438		2638	14741	0408	00274	1668
0175	0552 B	33710		2661	14743	0447	00340	1452
0200	0550 B	33814		2670	14748	0483	00408	1375
0225	0527 B	3385 D		2676	14743	0517	00482	1323
0250	0498	33862		2680	14735	0550	00562	1285
0300	0459	33896		2687	14728	0613	00740	1221

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0400	0415 B	33949		2696	14727	0732	01167	1142
0500	0389	34073		2708	14734	0842	01671	1030
0600	0368	3416 B		2718	14743	0942	02234	0948
0700	0350	3423 B		2725	14753	1034	02851	0884
0800	0334	34289		2731	14763	1121	03519	0834
1000	0304	34372		2740	14785	1282	04997	0752
1200	0272	34431		2748	14805	1427	06639	0685
1500	0232	34502		2757	14840	1624	09348	0604
2000	0196	34586		2766	14910	1910	14456	0522
2500	0170	34631		2772	14985	2163	20322	0475

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 1021	AIR T 17.2	VIS 96
CONS. NO 030	MONTH 8	MXSAMPD 15		WAVES 2 0722	WET B 16.1	STN 006
LAT 49-15 N	DAY 03	NO.DPTH 19		WND-DIR 080	WW-CODE 41	
LON 134-40 W	HR 19.6	W-COLOR		WND-SPD 06	CLD-TPE 6	
MARSD SQ 158		W-TRNSP		BARO 1018.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
196	0000	152 B	32272		2385	15047
196	0010	1474	32273		2395	15034
196	0020	1432 B	32312		2407	15022
196	0030	1274	32326		2440	14971
196	0050	0884 B	32420		2515	14836
196	0075	0786	32534		2538	14804
196	0100	0726 B	32914		2576	14790
196	0125	0660	33395		2623	14774
196	0150	0645 B	33655		2646	14776
196	0175	0630 B	33808		2660	14776
196	0200	0613 B	33876		2667	14774
196	0250	0556 C	33921		2678	14760
196	0300	0517	33960		2685	14753
196	0400	0476	34035		2696	14753
201	0500	0450	34116		2705	14760
201	0750	0374	34287		2727	14772
201	1000	0308	34368		2740	14787
201	1250	0266	34444		2749	14811
201	1500	0227	34509		2758	14837

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1520 B	32272		2385	15047	0000	00000	4062
0010	1474	32273		2395	15034	0040	00002	3970
0020	1432 B	32312		2407	15022	0080	00008	3860
0030	1274	32326		2440	14971	0117	00018	3549
0050	0884 B	32420		2515	14836	0181	00043	2835
0075	0786	32534		2538	14804	0250	00087	2615
0100	0726 B	32914		2576	14790	0311	00141	2254
0125	0660	33395		2623	14774	0362	00199	1813
0150	0645 B	33655		2646	14776	0405	00260	1604
0175	0630 B	33808		2660	14776	0444	00324	1474
0200	0613 B	33876		2667	14774	0480	00394	1406
0225	0585 B	3391 C		2673	14767	0515	00469	1352
0250	0556 C	33921		2678	14760	0548	00551	1309
0300	0517	33960		2685	14753	0613	00732	1239
0400	0476	34035		2696	14753	0733	01162	1146
0500	0450	34116		2705	14760	0845	01676	1066

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0420	34193		2715	14765	0948	02260	0984
0700	0389	34258		2723	14770	1044	02897	0910
0800	0359	34307		2730	14774	1133	03581	0848
1000	0308	34368		2740	14786	1296	05078	0760
1200	0273	34429		2748	14806	1442	06732	0688
1500	0227	34509		2758	14837	1637	09420	0593

C-REF-NO 003 YR 1963 DEPTH WAVES 1 4911 AIR T 15.5 VIS
 CONS. NO 031 MONTH 8 MXSAMPD 15 WAVES 2 2722 WET B 14.9 STN 005
 LAT 49-10 N DAY 04 NO.DPTH 19 WND-DIR 990 WW-CODE 41
 LON 132-40 W HR 02.4 W-COLOR 10 WND-SPD 01 CLD-TPE 6
 MARSD SQ 158 W-TRNSP 11 BARO 1020. CLD-AMT 6 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
024	0000	159 B	32431		2382	15071
024	0010	1524	32415		2395	15052
024	0020	1458 B	32421		2410	15032
024	0030	1326 B	32444		2439	14990
024	0050	0887 B	32469		2518	14838
024	0075	0820	32495		2530	14817
024	0100	0755 B	32612		2549	14797
024	0125	0659	33010		2593	14769
024	0150	0610 B	33338		2625	14757
024	0175	0623 B	33677		2650	14771
024	0200	0618 B	33786		2659	14775
024	0250	0579 B	33863		2670	14768
024	0300	0542	33874		2676	14762
024	0400	0447	33938		2691	14740
029	0500	0429	34066		2704	14751
029	0750	0371 C	34281		2727	14770
029	1000	0324	34392		2740	14794
029	1250	0273	34450		2749	14814
029	1500	0231 B	34520		2758	14839

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1590 B	32431		2382	15071	0000	00000	4093
0010	1524	32415		2395	15052	0040	00002	3969
0020	1458 B	32421		2410	15032	0080	00008	3832
0030	1326 B	32444		2439	14990	0117	00017	3559
0050	0887 B	32469		2518	14838	0181	00043	2803
0075	0820	32495		2530	14817	0250	00087	2691
0100	0755 B	32612		2549	14797	0315	00145	2518
0125	0659	33010		2593	14769	0374	00212	2099
0150	0610 B	33338		2625	14757	0423	00280	1797
0175	0623 B	33677		2650	14771	0465	00351	1563
0200	0618 B	33786		2659	14775	0503	00424	1479
0225	0601 B	3384 C		2666	14773	0540	00504	1420
0250	0579 B	33863		2670	14768	0575	00590	1380
0300	0542	33874		2676	14762	0643	00782	1333
0400	0447	33938		2691	14740	0770	01235	1186
0500	0429	34066		2704	14750	0885	01761	1079

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0406 B	34167		2714	14759	0989	02349	0988
0700	0383 C	34248		2723	14767	1085	02987	0910
0800	0361 C	34309		2730	14775	1174	03671	0848
1000	0324	34392		2740	14794	1337	05169	0760
1200	0283	34440		2748	14810	1484	06826	0691
1500	0231 B	34520		2758	14839	1679	09512	0590

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 26XX	AIR T 16.1	VIS 96
CONS. NO 032	MONTH 8	MXSAMPD 15	WAVES 2 27XX	WET B 14.9	STN C04	
LAT 49-01 N	DAY 04	NO.DPTH 19	WND-DIR 260	WW-CODE 41		
LON 130-40 W	HR 09.2	W-COLOR	WND-SPD 05	CLD-TPE 7		
MARSD SQ 158		W-TRNSP	BARO 1020.	CLD-AMT 8	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
092	0000	163 B	32203		2355	15080
092	0010	1522	32148		2375	15048
092	0020	1497 B	32176		2383	15042
092	0030	1475	32196		2389	15036
092	0050	0989 B	32404		2497	14875
092	0075	0886	32469		2518	14841
092	0100	0827 B	32632		2540	14825
092	0125	0720	33143		2595	14794
092	0150	0715 B	33527		2626	14802
092	0175	0725 B	33759		2643	14813
092	0200	0706 B	33847		2652	14811
092	0249	0639 B	33927		2668	14793
092	0299	0584	33949		2676	14780
092	0398	0525	34025		2690	14773
097	0495	0468	34096		2702	14766
097	0743	0389 B	34258		2723	14777
097	0990	0329	34369		2738	14794
097	1238	0279	34466		2750	14815
097	1486	0238	34520		2758	14840

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1630 B	32203		2355	15080	0000	00000	4345
0010	1522	32148		2375	15048	0043	00002	4160
0020	1497 B	32176		2383	15042	0084	00008	4091
0030	1475	32196		2389	15036	0125	00019	4034
0050	0989 B	32404		2497	14875	0196	00047	3007
0075	0886	32469		2518	14841	0269	00093	2806
0100	0827 B	32632		2540	14825	0337	00154	2603
0125	0720	33143		2595	14794	0396	00221	2079
0150	0715 B	33527		2626	14802	0445	00289	1791
0175	0725 B	33759		2643	14813	0488	00361	1635
0200	0706 B	33847		2652	14810	0528	00438	1548
0225	0673 B	3390 B		2661	14802	0566	00521	1470
0250	0638 B	33928		2668	14793	0602	00609	1405
0300	0583	33950		2677	14779	0671	00803	1326
0400	0524	34027		2690	14773	0799	01259	1209
0500	0466	34100		2702	14766	0915	01794	1096

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0428 B	34169		2712	14768	1022	02393	1010
*0700	0399 B	34233		2720	14773	1120	03050	0939
0800	0374 B	34286		2727	14780	1212	03757	0879
1000	0327	34373		2738	14795	1380	05298	0777
1200	0286	34453		2748	14812	1528	06965	0685
1500	0236	34522		2758	14842	1722	09648	0593

C-REF-NO 003	YR 1963	DEPTH		WAVES 1 3522	AIR T 14.4	VIS 96
CONS. NO 033	MONTH 8	MXSAMPD 24		WAVES 2 2722	WET B 13.8	STN 003
LAT 48-50 N	DAY 04	NO.DPTH 21		WND-DIR 350	WW-CODE 41	
LON 128-4 W	HR 16.0	W-COLOR		WND-SPD 06	CLD-TPE 6	
MARSD SQ 157		W-TRNSP		BARO 1018.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
160	0000	154 B	31881		2351	15048
160	0010	1517	31904		2357	15043
160	0020	1444 B	31929		2375	15022
160	0030	1104	31987		2445	14908
160	0050	0932 B	32224		2492	14851
160	0075	0854	32564		2531	14830
160	0100	0782 B	33023		2577	14813
160	0124	0738	33474		2619	14806
160	0149	0726 B	33710		2639	14808
160	0174	0714 B	33823		2649	14809
160	0199	0694 B	33891		2658	14806
160	0249	0650 B	33930		2667	14798
160	0298	0581	33943		2676	14778
160	0398	0516	34022		2690	14769
169	0489	0475	34084		2700	14768
169	0733	0396 B	34268		2723	14778
169	0975	0346	34385		2737	14799
169	1213	0291	34473		2749	14816
169	1462	0244	34524		2758	14839
169	1972	0196	34603		2768	14905
169	2381	0174				

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1540 B	31881		2351	15048	0000	00000	4390
0010	1517	31904		2357	15043	0044	00002	4328
0020	1444 B	31929		2375	15021	0086	00009	4165
0030	1104	31987		2445	14908	0125	00018	3499
0050	0932 B	32224		2492	14851	0191	00045	3052
0075	0854	32564		2531	14830	0263	00091	2689
0100	0782 B	33023		2577	14813	0325	00146	2249
0125	0737	33487		2620	14806	0377	00204	1847
0150	0726 B	33716		2639	14808	0421	00266	1664
0175	0713 B	33826		2650	14809	0462	00334	1569
0200	0693 B	33893		2658	14806	0500	00408	1497
0225	0673 B	3392 B		2663	14803	0537	00489	1453
0250	0649 B	33930		2667	14797	0574	00577	1417
0300	0579	33944		2677	14778	0643	00772	1325

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0400	0515	34023		2691	14769	0770	01227	1200
0500	0471	34093		2701	14768	0887	01763	1107
0600	0434	3417 B		2711	14771	0994	02367	1017
*0700	0405 B	34244		2720	14776	1093	03025	0937
0800	0381 B	34305		2727	14783	1184	03729	0874
1000	0340	34396		2739	14801	1351	05264	0775
1200	0294	34469		2749	14815	1499	06926	0682
1500	0239	3454 C		2759	14843	1691	09581	0583
2000	0189 B							

C-REF-NO 003	YR 1963	DEPTH	WAVES 1 34XX	AIR T 15.5	VIS 96
CONS. NO 034	MONTH 8	MXSAMPD 24	WAVES 2 34XX	WET B 14.7	STN 002
LAT 48-47 N	DAY 04	NO.DPTH 21	WND-DIR 340	WW-CODE 01	
LON 127-40 W	HR 20.8	W-COLOR 60	WND-SPD 06	CLD-TPE 6	
MARSD SQ 157		W-TRNSP 10	BARD 1020.	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
208	0000	146 B	31955		2373	15024
208	0010	1430	31950		2379	15016
208	0019	1382 B	31962		2390	15001
208	0029	1243	32037		2423	14957
208	0048	0942 B	32336		2499	14856
208	0072	0892	32494		2519	14843
208	0096	0791 B	33008		2575	14816
208	0120	0759	33446		2614	14813
208	0144	0753 B	33745		2638	14818
208	0168	0730 B	33825		2647	14814
208	0193	0698 B	33895		2657	14807
208	0241	0662 B	33959		2667	14801
208	0289	0598	33962		2676	14784
208	0386	0505	34002		2690	14762
214	0497	0456	34104		2704	14762
214	0745	0400 B	34271		2723	14782
214	0995	0351	34401		2738	14804
214	1245	0298	34483		2750	14825
214	1495	0244	34528		2758	14844
214	1995	0194	34607		2768	14908
214	2394	0176	34646		2773	14969

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1460 B	31955		2373	15024	0000	00000	4172
0010	1430	31950		2379	15016	0042	00002	4119
0020	1370 B	31967		2393	14998	0082	00008	3993
0030	1225 B	3205 B		2428	14951	0121	00018	3661
0050	0932 C	3235 D		2502	14853	0187	00045	2961
0075	0879	3255 D		2526	14840	0259	00090	2735
0100	0782 B	33088		2582	14814	0321	00145	2201
0125	0757	33523		2620	14814	0372	00203	1847
0150	0748 B	3378 C		2641	14818	0416	00265	1651
0175	0721 B	33847		2650	14812	0457	00332	1565
0200	0693 B	33909		2659	14806	0495	00406	1484
0225	0674 B	33946		2665	14803	0532	00486	1435
0250	0651 B	33961		2669	14798	0568	00573	1397
0300	0585	33964		2678	14780	0636	00766	1318

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0400	0497	34014		2692	14761	0762	01216	1186
0500	0455	34106		2704	14762	0877	01742	1079
0600	0428 B	34181		2713	14768	0982	02334	1002
*0700	0407 B	34245		2720	14777	1080	02988	0939
0800	0389 B	34303		2727	14787	1172	03698	0884
1000	0350	34403		2738	14805	1341	05248	0781
1200	0308	34471		2748	14821	1490	06933	0696
1500	0243	34529		2758	14845	1687	09646	0597
2000	0188 B	34605		2769	14906	1965	14600	0498

C-REF-NO 003	YR 1963	DEPTH	WAVES 1 3322	AIR T 14.5	VIS 96
CONS. NO 035	MONTH 8	MXSAMPD 12	WAVES 2 3022	WET B 14.4	STN 001
LAT 48-42 N	DAY 05	NO.DPTH 18	WND-DIR 330	WW-CODE 02	
LOX 126-40 W	HR 01.1	W-COLOR	WND-SPD 06	CLD-TPE 6	
MARSD SQ 157		W-TRNSP	BARO 1020.	CLD-AMT 8	FW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
011	0000	138 B	32024		2395	14998
011	0010	1354	32032		2401	14991
011	0019	1306 B	32055		2412	14977
011	0029	0998	32196		2479	14872
011	0049	0900 B	32463		2516	14842
011	0073	0812	32904		2563	14819
011	0097	0761 B	33396		2609	14809
011	0121	0763	33737		2636	14818
011	0146	0762 B	33858		2645	14824
011	0170	0736 B	33914		2654	14818
011	0195	0713 B	33958		2660	14814
011	0244	0654 C	33996		2671	14799
011	0293	0596	34020		2681	14784
011	0391	0548	34077		2691	14782
015	0493	0497	34144		2702	14779
015	0743	0420 B	34285		2722	14790
015	0993	0360	34339		2732	14807
015	1195	0311	34466		2747	14822

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1380 B	32024		2395	14998	0000	00000	3964
0010	1354	32032		2401	14991	0040	00002	3911
0020	1277 D	32066		2419	14968	0078	00008	3744
0030	0985 C	32209		2482	14867	0113	00017	3141
0050	0896 B	32480		2518	14841	0172	00041	2808
0075	0806	3295 B		2568	14817	0237	00081	2336
0100	0760 B	33449		2614	14810	0290	00129	1902
0125	0764	3377 B		2638	14820	0336	00180	1675
0150	0758 B	33870		2647	14823	0377	00238	1595
0175	0731 B	33924		2655	14817	0416	00303	1521
0200	0707 B	33964		2661	14813	0454	00376	1463
0225	0678 B	33986		2667	14805	0490	00455	1411
0250	0646 C	33999		2672	14797	0525	00540	1363
0300	0591	34024		2681	14784	0591	00728	1281
0400	0543	34083		2692	14781	0716	01173	1190
0500	0494	34149		2703	14779	0831	01704	1093
0600	0459 B	34212		2712	14781	0938	02304	1015

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
*0700	0430 B	34265		2719	14787	1037	02966	0951
0800	0406 B	3430 C		2724	14794	1131	03690	0909
1000	0356	3437 I		2735	14807	1305	05292	0811
1200	0310	34468		2747	14822	1459	07015	0701

S E C T I O N I V

Bathythermograms

C.C.G.S. "ST. CATHARINES"

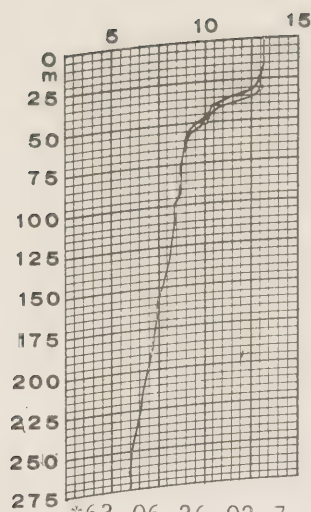
Daily bathythermograms

and

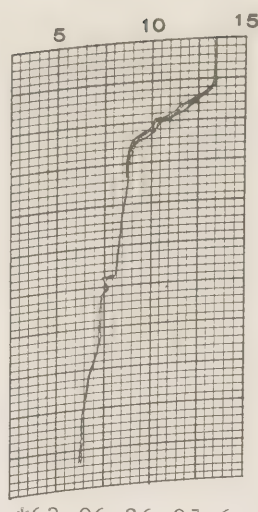
OCEAN series bathythermograms

NOTE: Space-time series bathythermograms start on
page 116, following the OCEAN series

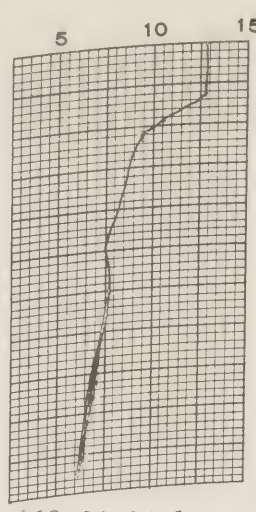
C.C.C.S. "St. Catharines". Survey P-63-3



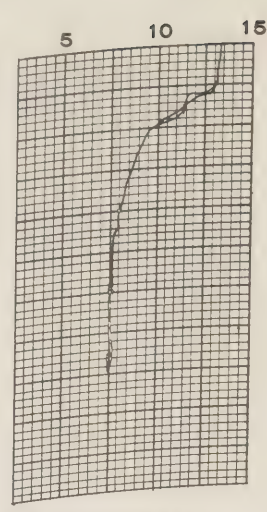
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48° 42' n
126° 40' w



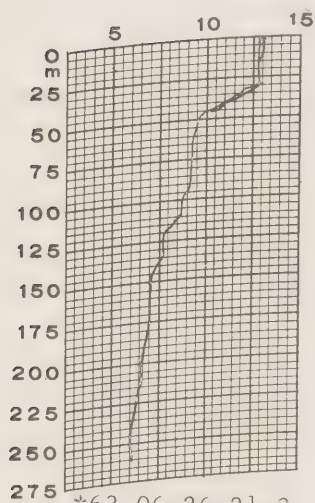
*63-06-26-07.6
48° 46' n
127° 40' w



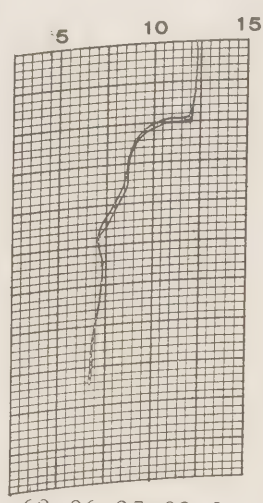
*63-06-26-12.7
48° 51' n
128° 40' w



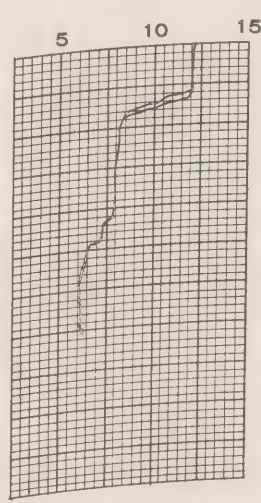
63-06-26-17.7
48° 56' n
129° 40' w



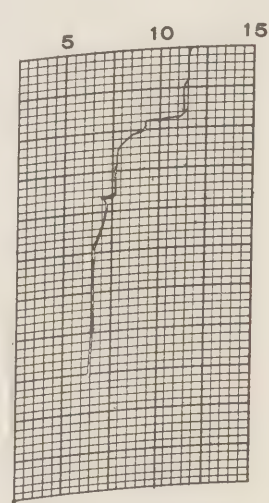
*63-06-26-21.2
49° 01' n
130° 40' w



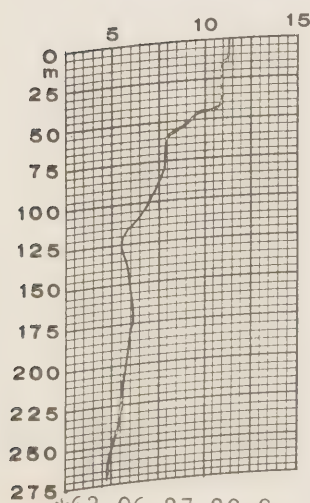
63-06-27-02.0
49° 04' n
131° 40' w



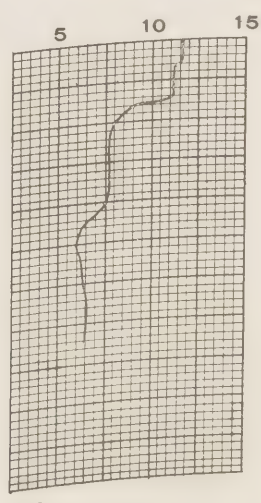
*63-06-27-05.1
49° 10' n
132° 40' w



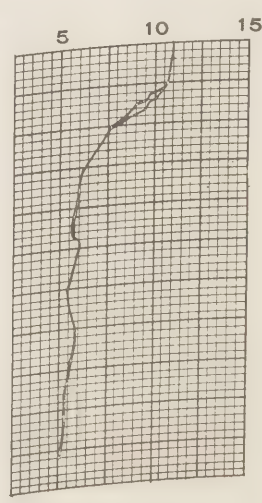
63-06-27-18.0
49° 23' n
135° 40' w



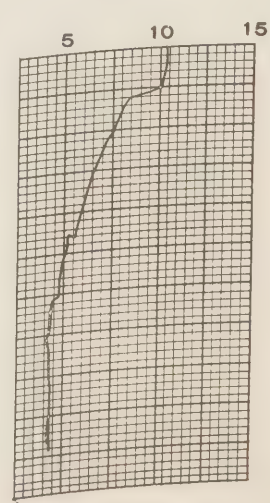
*63-06-27-20.8
49° 26' n
136° 40' w



63-06-28-01.5
49° 30' n
137° 40' w

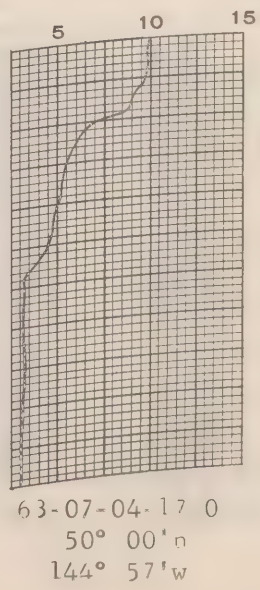
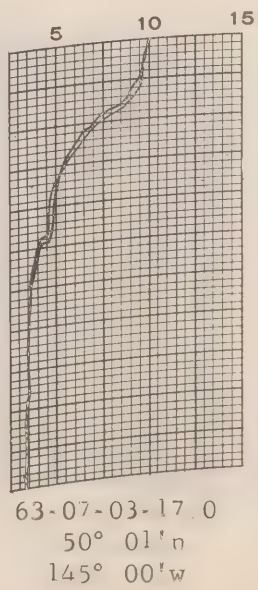
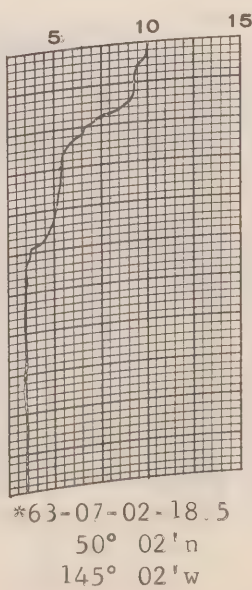
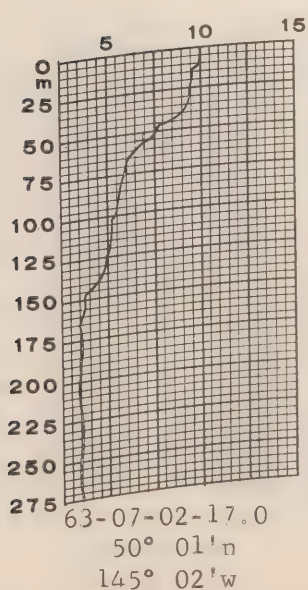
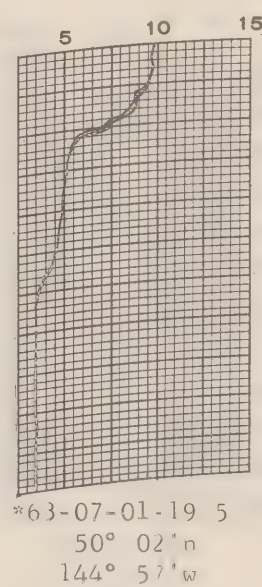
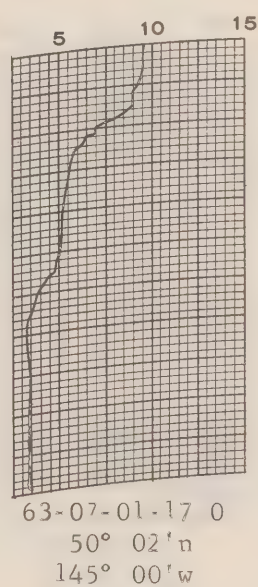
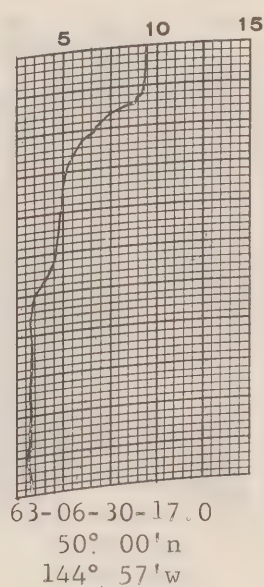
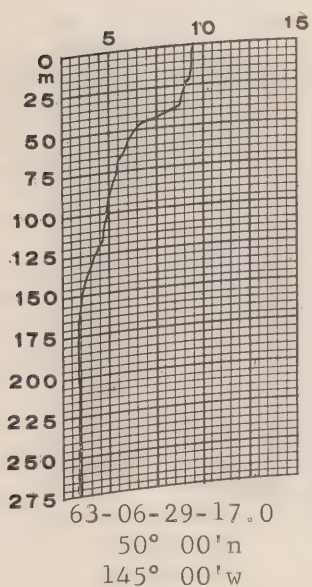
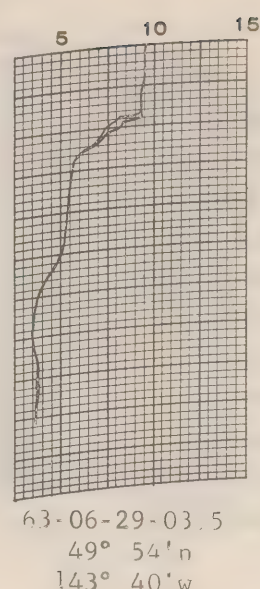
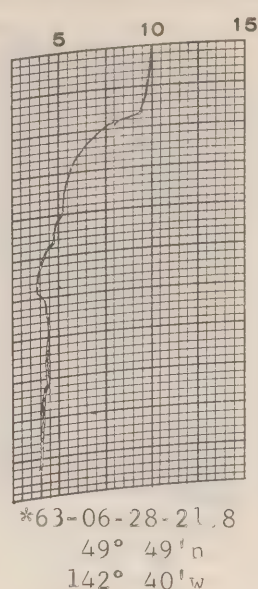
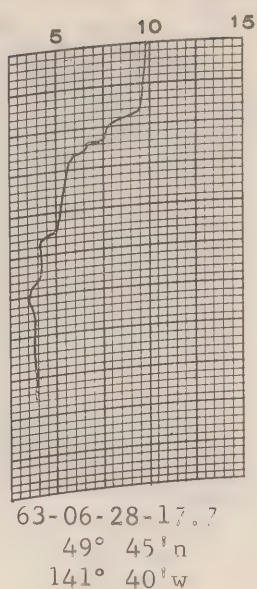
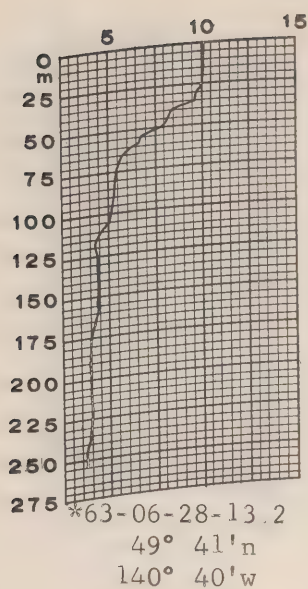


*63-06-28-05.0
49° 33' n
138° 40' w

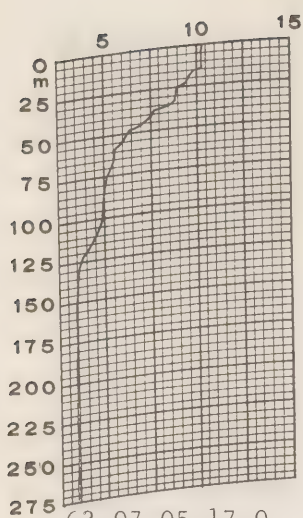


63-06-28-09.7
49° 37' n
139° 40' w

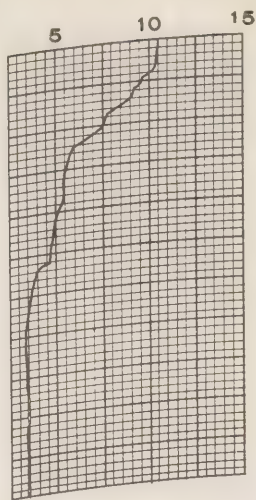
C.C.G.S. "St. Catharines", Survey P-63-3



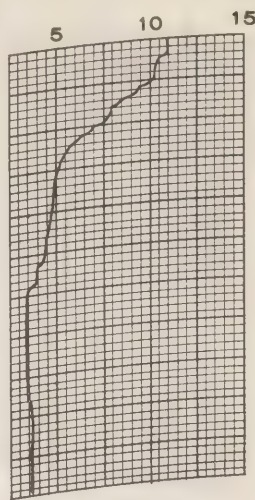
C.C.G.S. "St. Catharines", Survey P-63-3



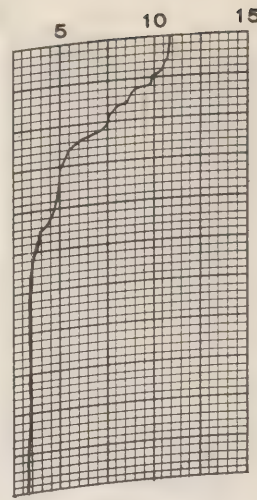
63-07-05-17.0
50° 01'N
144° 59'W



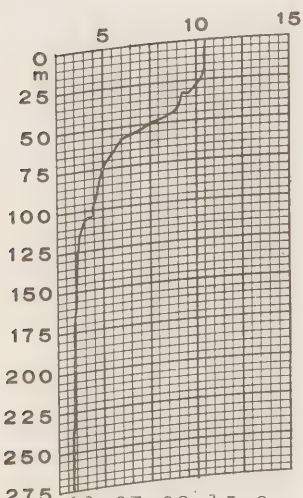
*63-07-05-19.2
50° 01'N
144° 59'W



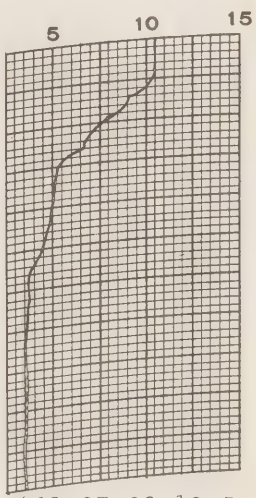
63-07-06-17.0
49° 56'N
145° 00'W



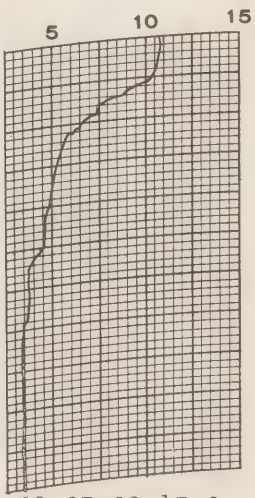
63-07-07-17.0
50° 02'N
145° 02'W



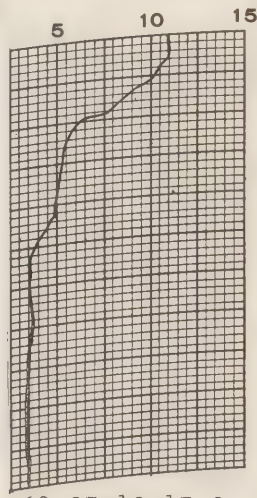
63-07-08-17.0
50° 00'N
145° 00'W



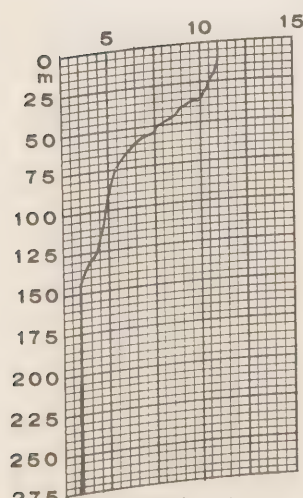
*63-07-08-19.5
50° 00'N
145° 01'W



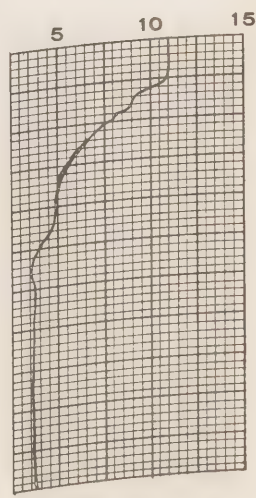
63-07-09-17.0
50° 02'N
145° 00'W



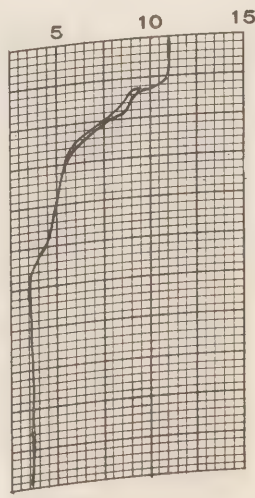
63-07-10-17.0
50° 03'N
145° 01'W



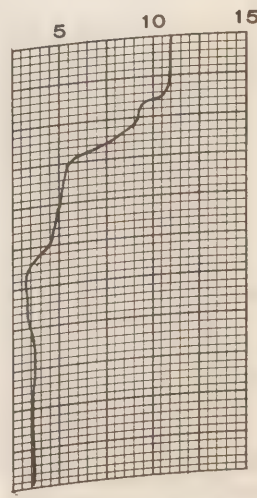
*63-07-10-19.2
50° 00'N
144° 58'W



63-07-11-17.0
49° 58'N
144° 58'W

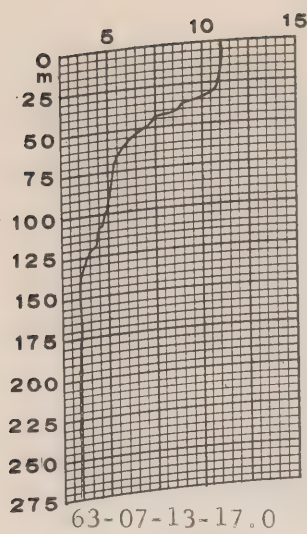


63-07-12-17.0
49° 58'N
144° 58'W

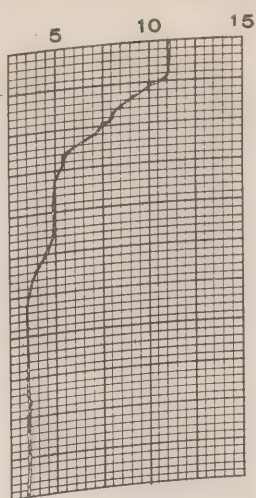


*63-07-12-19.2
49° 59'N
144° 53'W

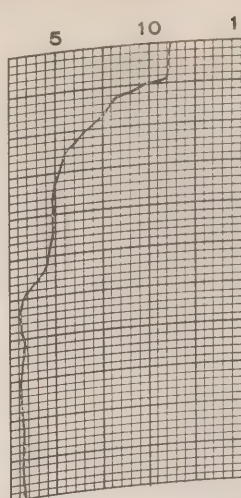
C.C.G.S. "St. Catharines", Survey P-63-3



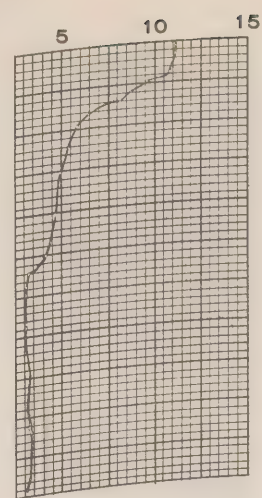
63-07-13-17.0
49° 47' n
145° 00' w



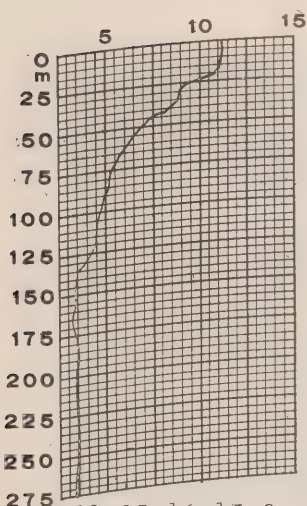
63-07-14-17.0
50° 00' n
145° 00' w



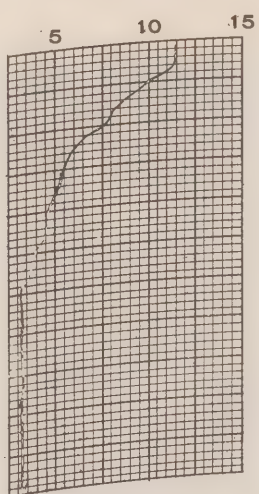
63-07-15-17.0
49° 57' n
144° 57' w



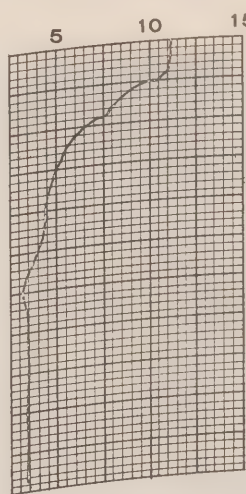
*63-07-15-18.2
49° 57' n
144° 56' w



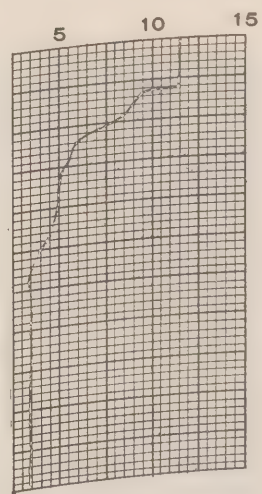
63-07-16-17.0
49° 56' n
144° 55' w



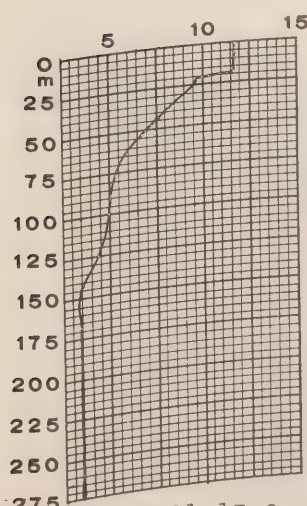
*63-07-17-19.5
50° 00' n
145° 00' w



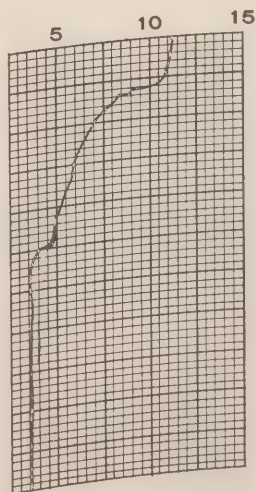
63-07-18-17.0
49° 59' n
144° 58' w



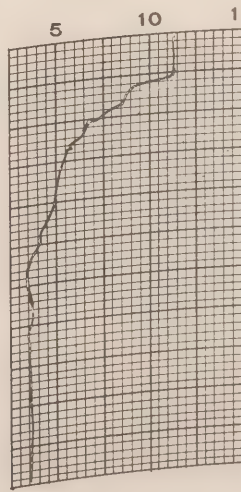
63-07-20-17.0
50° 00' n
144° 59' w



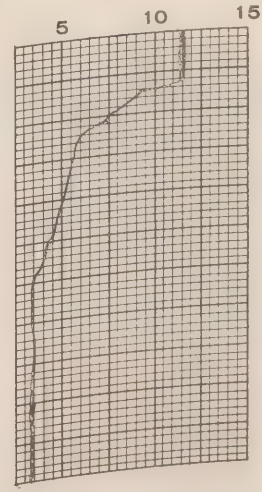
63-07-21-17.0
50° 00' n
145° 00' w



63-07-22-17.0
49° 58' n
144° 56' w

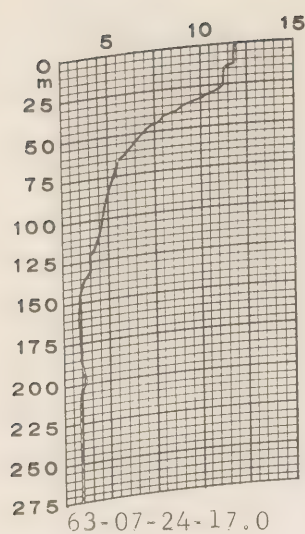


63-07-23-17.0
50° 00' n
145° 01' w

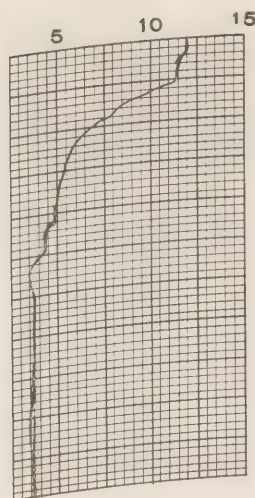


*63-07-23-18.5
50° 00' n
145° 02' w

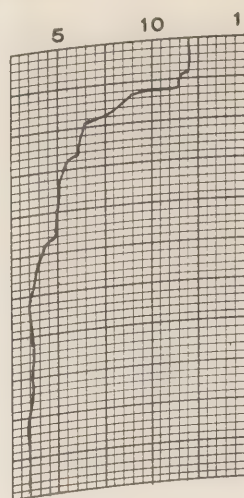
C.C.G.S. "St. Catharines", Survey P-63-3



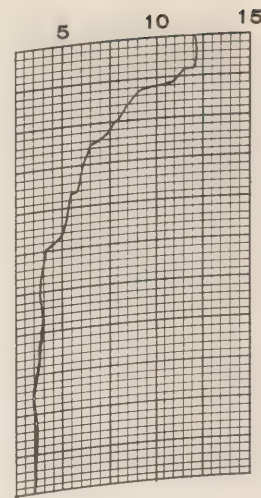
63-07-24-17.0
50° 01'N
144° 58'W



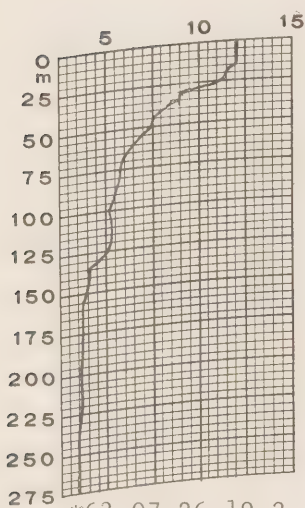
*63-07-24-19.2
50° 10'N
144° 50'W



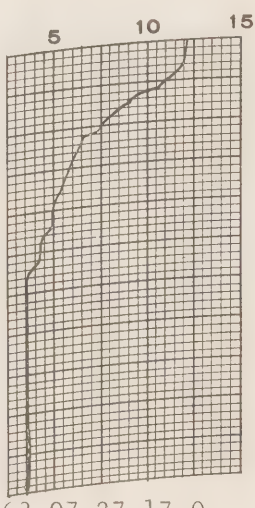
63-07-25-17.0
50° 03'N
144° 55'W



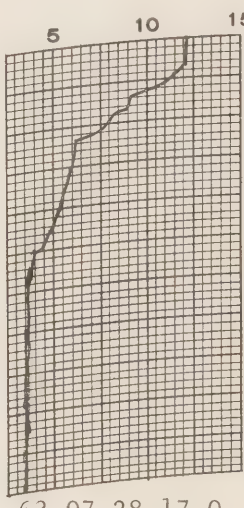
63-07-26-17.0
49° 59'N
144° 57'W



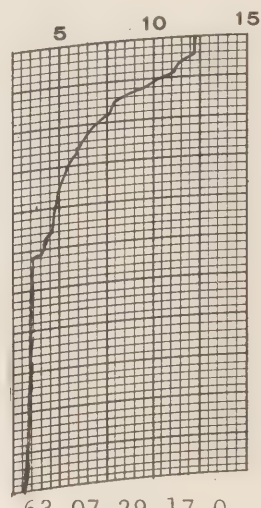
*63-07-26-19.2
49° 57'N
144° 57'W



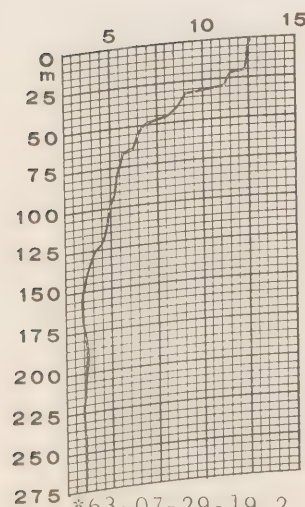
63-07-27-17.0
50° 00'N
144° 59'W



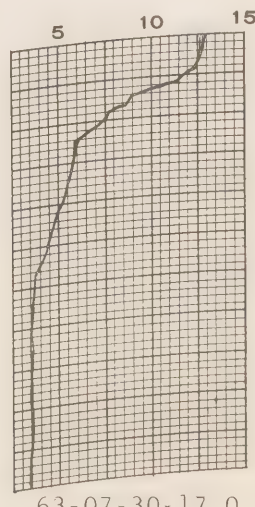
63-07-28-17.0
50° 00'N
145° 00'W



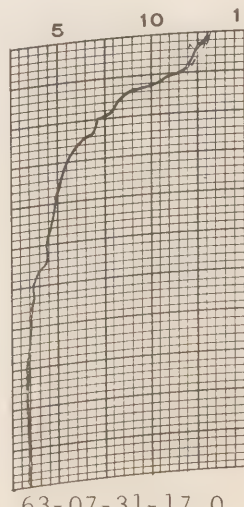
63-07-29-17.0
50° 00'N
144° 57'W



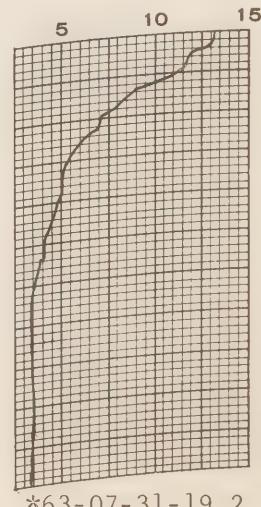
*63-07-29-19.2
49° 59'N
144° 45'W



63-07-30-17.0
50° 00'N
144° 58'W

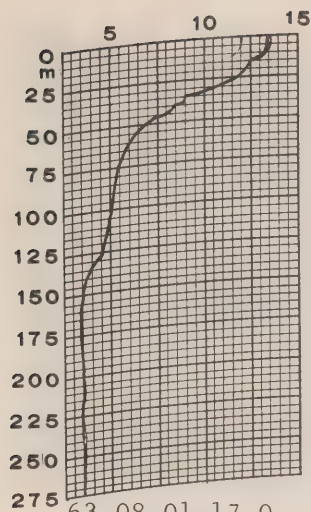


63-07-31-17.0
50° 01'N
144° 59'W

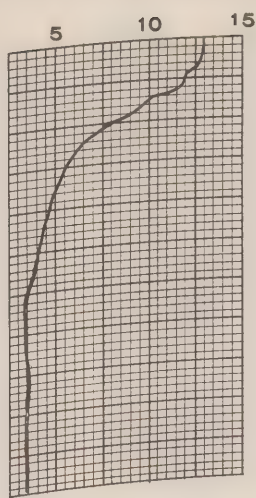


*63-07-31-19.2
50° 02'N
144° 57'W

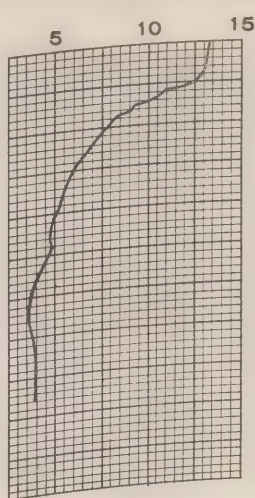
C.C.G.S. "St. Catharines". Survey P-63-3



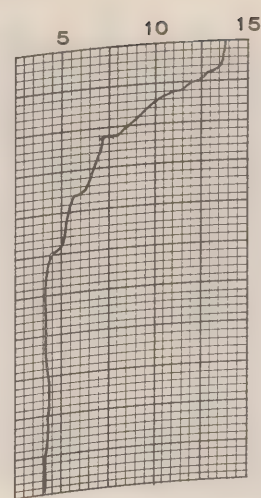
63-08-01-17.0
50° 00'N
144° 56'W



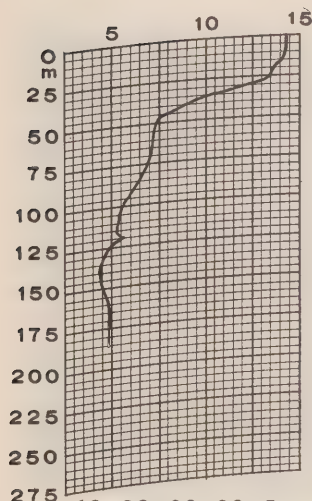
*63-08-02-15.2
49° 51'N
142° 40'W



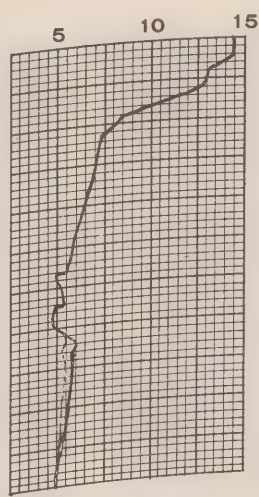
63-08-02-19.7
49° 45'N
141° 40'W



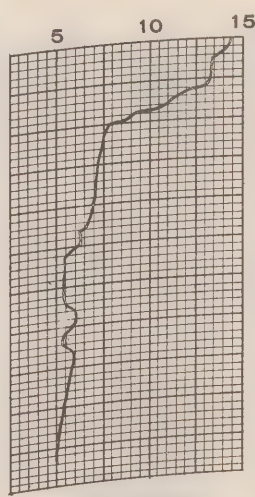
*63-08-02-23.3
49° 41'N
140° 40'W



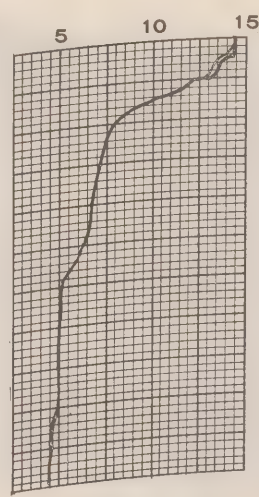
63-08-03-02.5
49° 38'N
139° 40'W



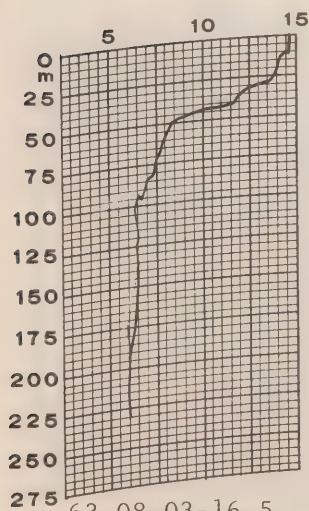
*63-08-03-06.0
49° 37'N
138° 40'W



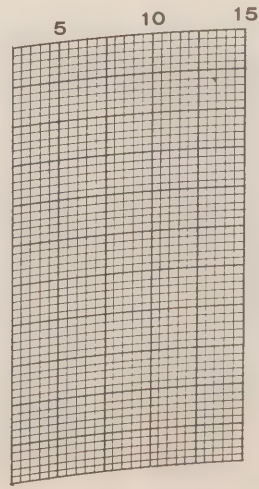
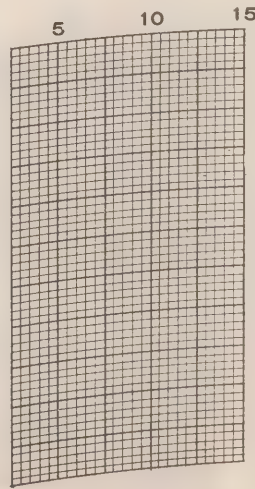
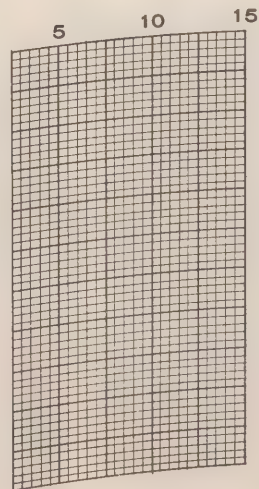
63-08-03-09.3
49° 29'N
137° 40'W



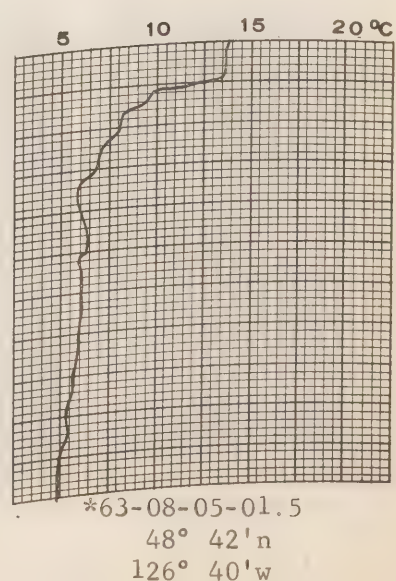
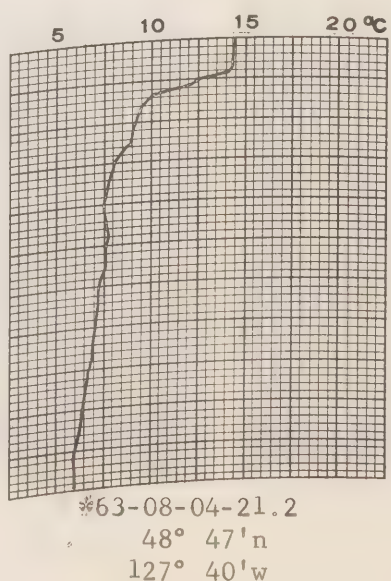
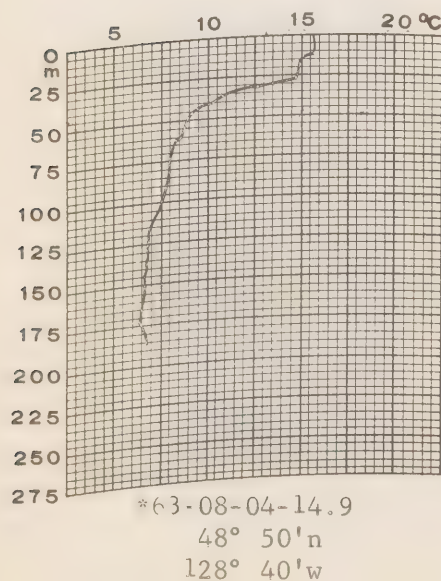
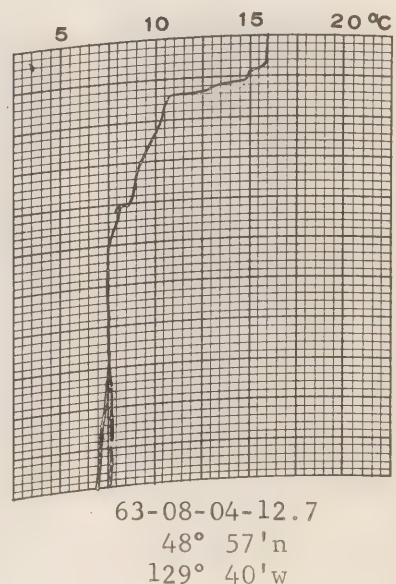
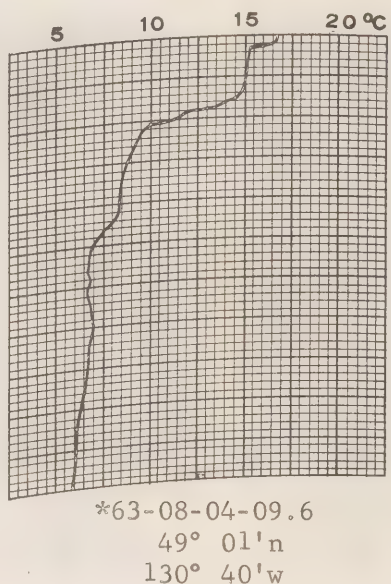
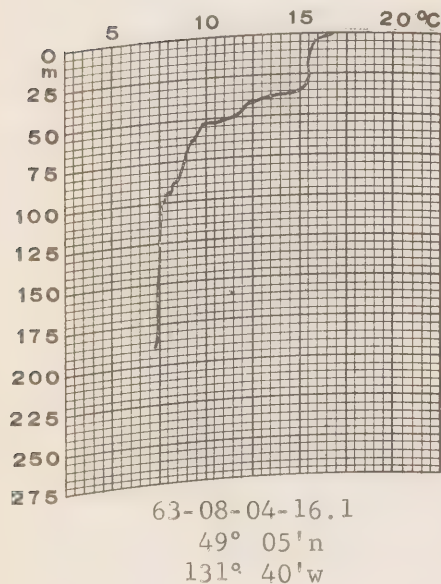
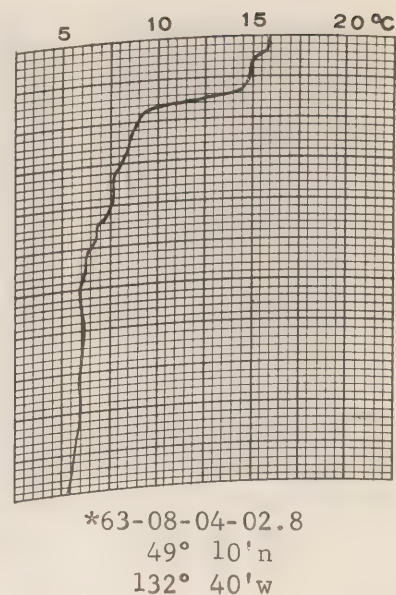
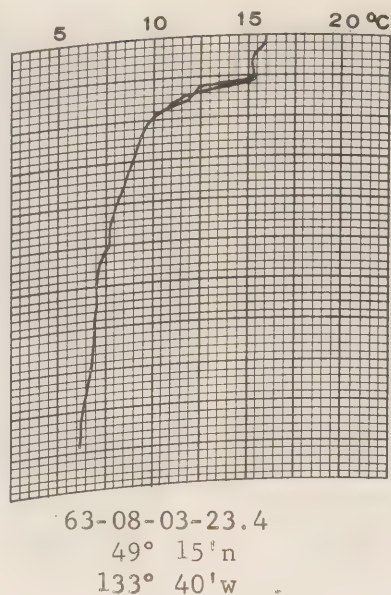
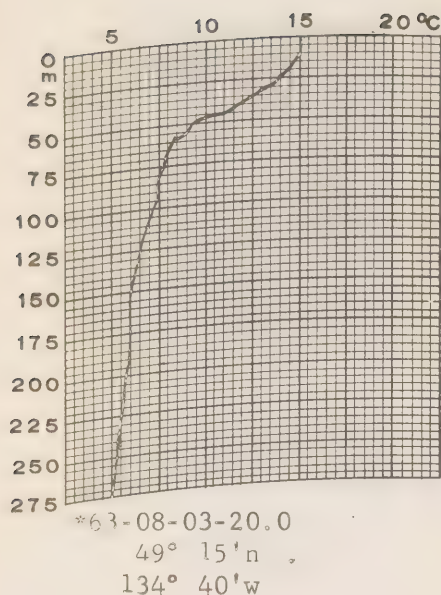
*63-08-03-13.2
49° 26'N
136° 40'W



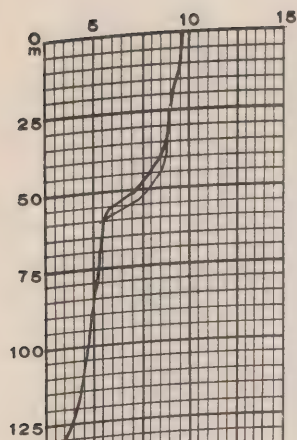
63-08-03-16.5
49° 22'N
135° 40'W



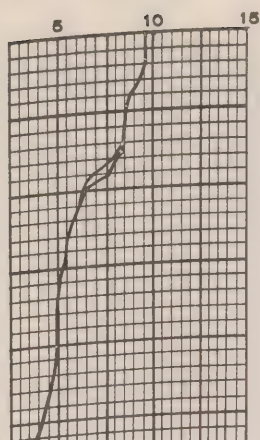
C.C.G.S. "St. Catharines", Survey P-63-3



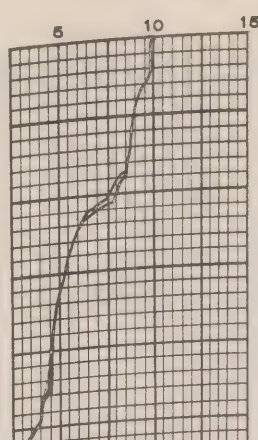
C.C.G.S. "St. Catharines", Survey P-63-3



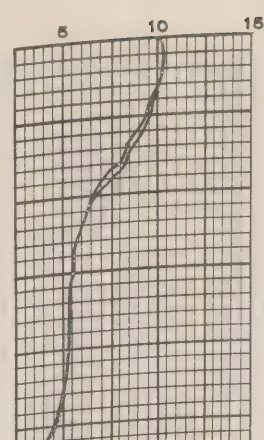
63-06-30-02.0
50° 00' n
145° 00' w



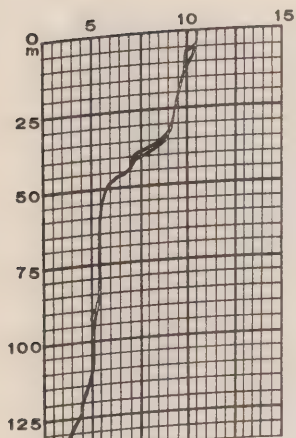
63-07-01-02.0
50° 03' n
145° 02' w



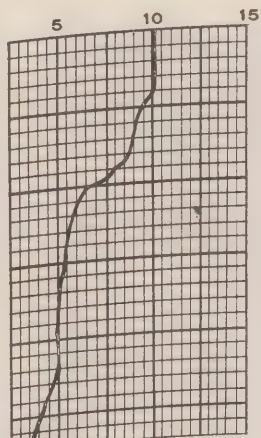
63-07-02-02.0
50° 03' n
145° 01' w



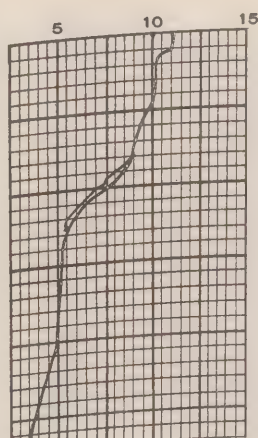
63-07-03-02.0
50° 02' n
145° 02' w



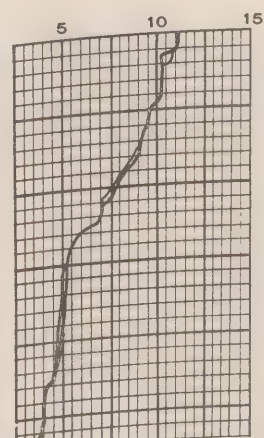
63-07-04-02.0
50° 01' n
145° 04' w



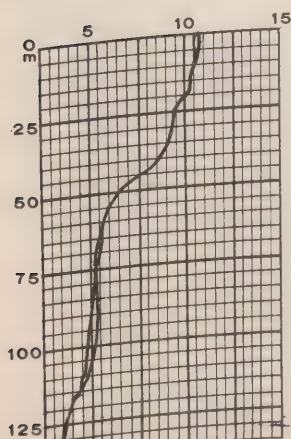
63-07-05-02.0
50° 04' n
145° 00' w



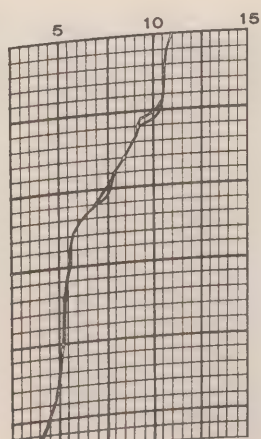
63-07-06-02.0
50° 03' n
145° 05' w



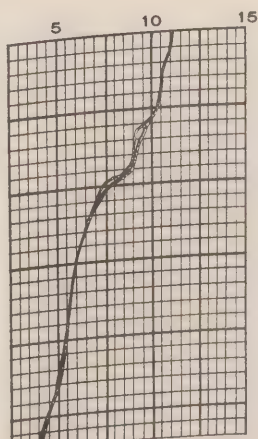
63-07-07-02.0
50° 00' n
145° 00' w



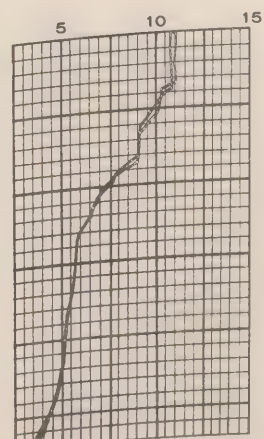
63-07-08-02.0
49° 57' n
145° 00' w



63-07-09-02.0
50° 03' n
145° 03' w

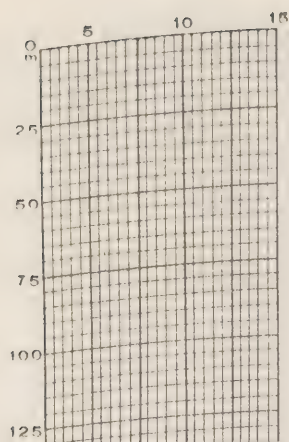


63-07-10-02.0
50° 02' n
145° 02' w

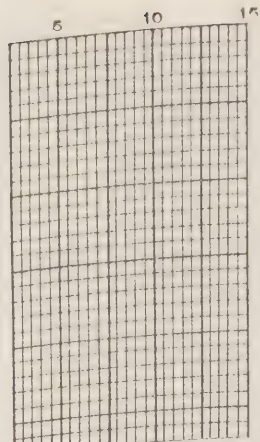


63-07-11-02.0
49° 59' n
145° 03' w

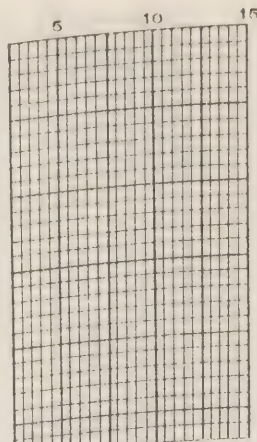
C.C.G.S. "St Catharines", Survey P-63-3



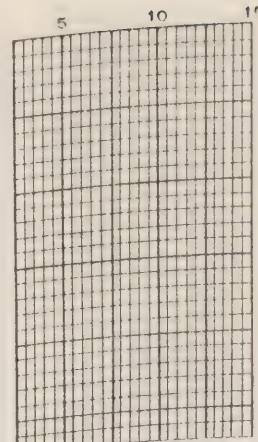
63-07-12-02.0
49° 58' n
145° 03' w



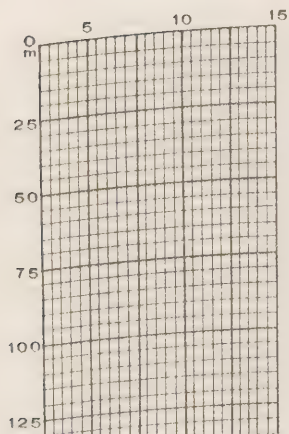
63-07-13-02.0
50° 01' n
145° 02' w



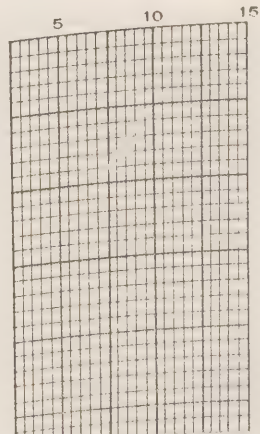
63-07-14-02.0
50° 01' n
145° 02' w



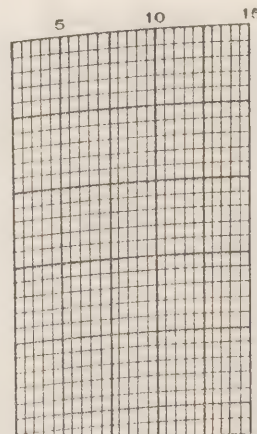
63-07-15-02.0
50° 00' n
145° 02' w



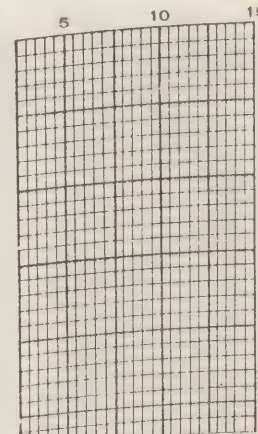
63-07-16-02.0
50° 02' n
145° 01' w



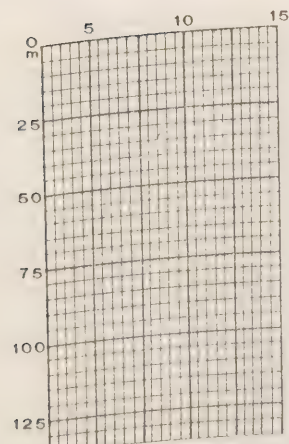
63-07-17-02.0
50° 00' n
145° 08' w



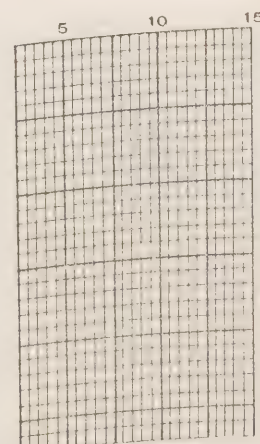
63-07-18-02.0
50° 01' n
144° 57' w



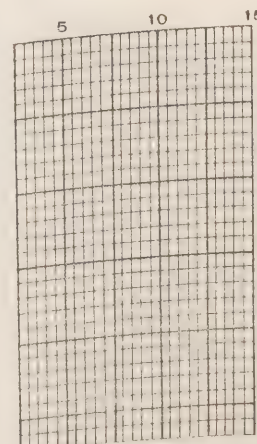
63-07-20-02.0
50° 00' n
145° 00' w



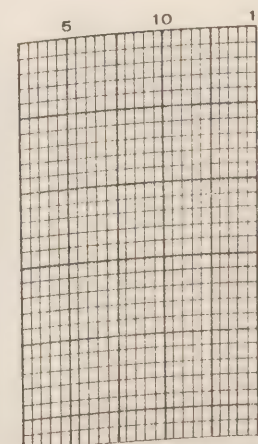
63-07-21-02.0
50° 00' n
145° 00' w



63-07-23-02.0
49° 58' n
144° 57' w

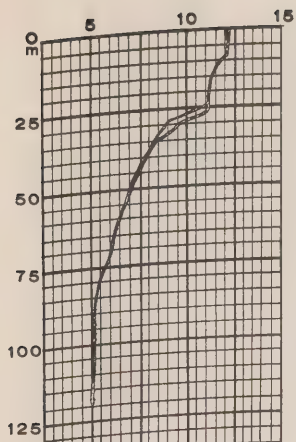


63-07-19-02.0
49° 52' n
144° 57' w

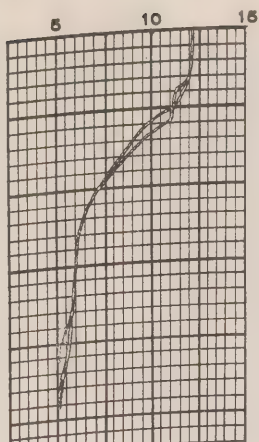


63-07-24-02.0
50° 00' n
145° 00' w

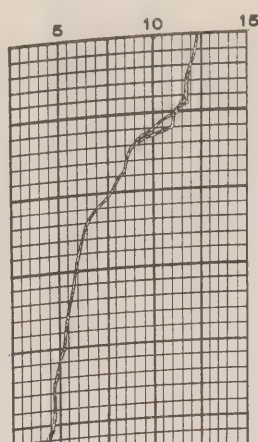
C.C.G.S. "St. Catharines", Survey P-63-3



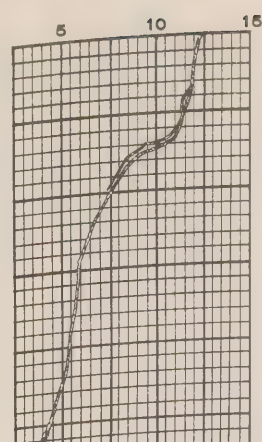
63-07-25-02.0
49° 59' n
144° 55' w



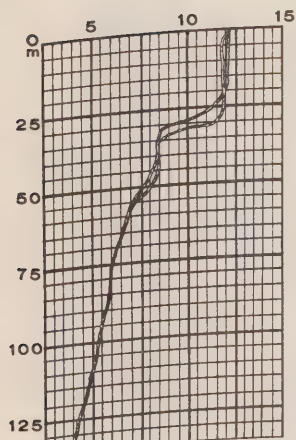
63-07-26-02.0
50° 01' n
144° 58' w



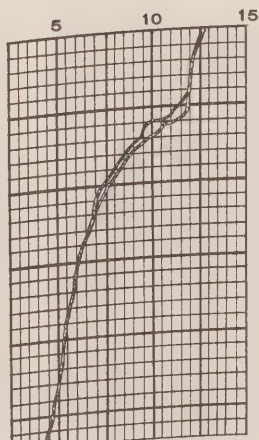
63-07-27-02.0
50° 00' n
145° 00' w



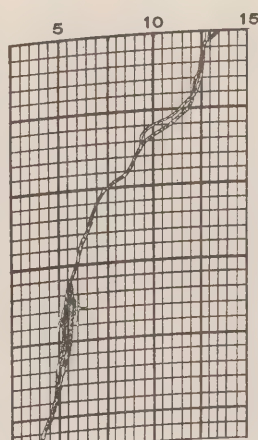
63-07-28-02.0
50° 00' n
145° 00' w



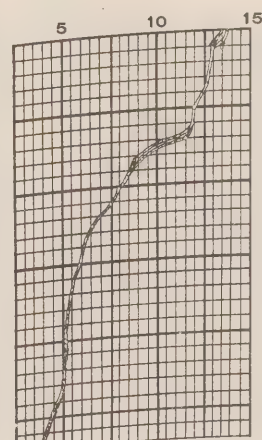
63-07-29-02.0
50° 00' n
145° 00' w



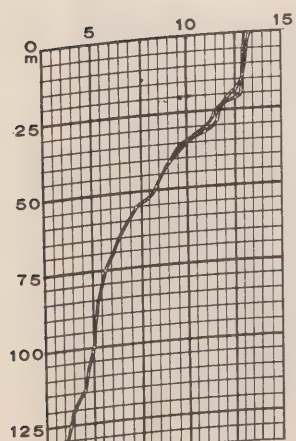
63-07-30-02.0
49° 59' n
144° 58' w



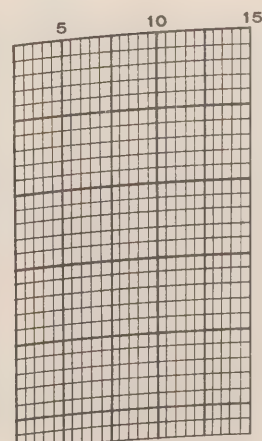
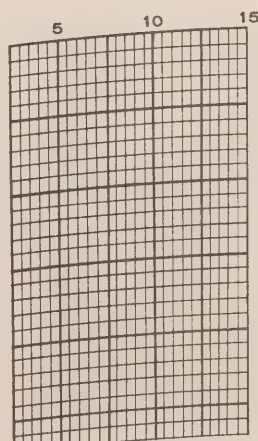
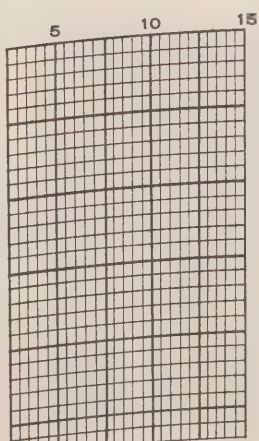
63-07-31-02.0
50° 00' n
145° 02' w



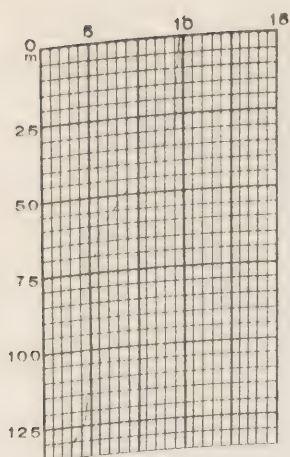
63-08-01-02.0
50° 00' n
144° 59' w



63-08-02-02.0
50° 00' n
144° 56' w



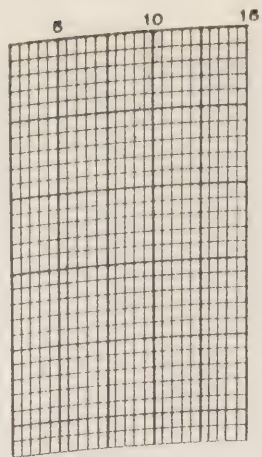
C.C.G.S. "St. Catharines", Survey P-6343, OCEAN Series



63-07-01-18.7

50° 02' n

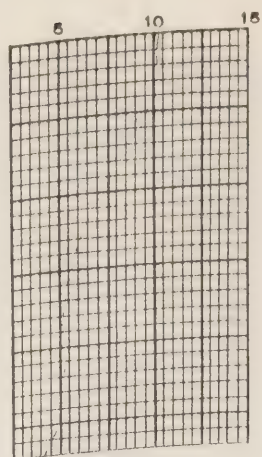
144° 57' w



63-07-03-18.2

49° 59' n

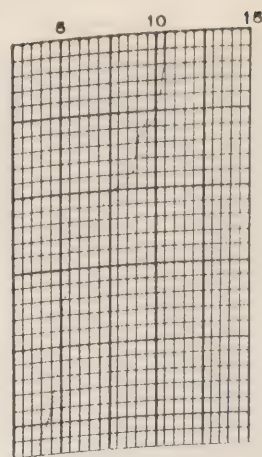
145° 00' w



63-07-05-18.7

50° 01' n

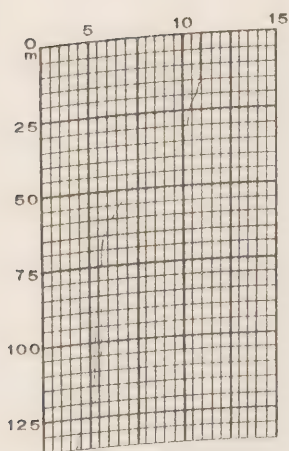
144° 59' w



63-07-08-18.3

50° 00' n

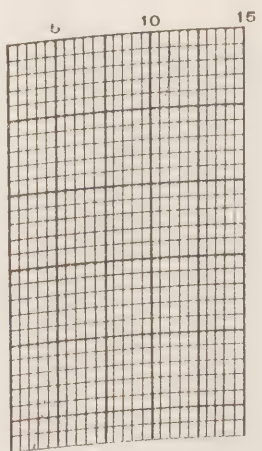
145° 02' w



63-07-10-18.7

49° 59' n

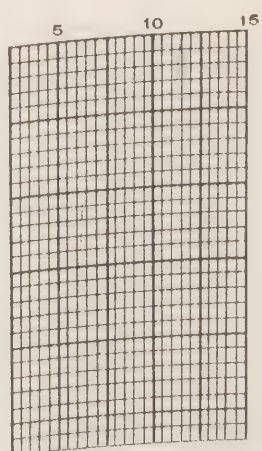
144° 59' w



63-07-12-18.7

49° 58' n

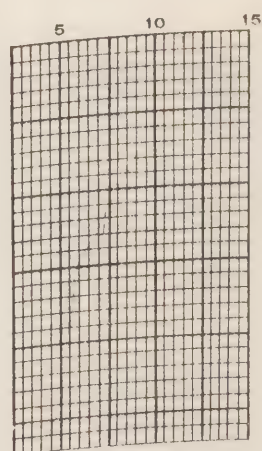
144° 57' w



63-07-15-19.0

49° 56' n

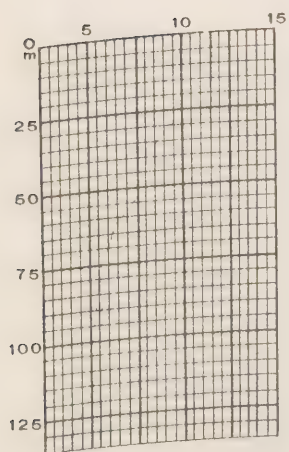
144° 58' w



63-07-17-18.5

50° 01' n

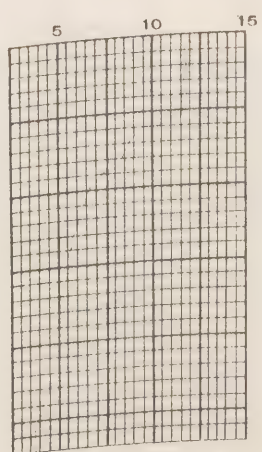
144° 59' w



63-07-20-18.3

50° 00' n

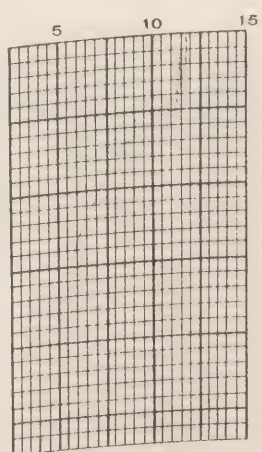
145° 00' w



63-07-24-18.7

50° 12' n

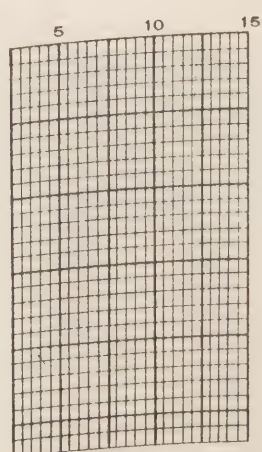
144° 52' w



63-07-26-18.7

49° 58' n

144° 52' w

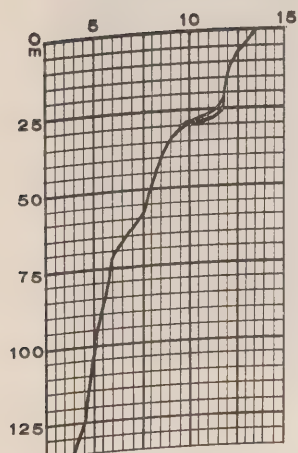


63-07-29-18.8

49° 58' n

144° 54' w

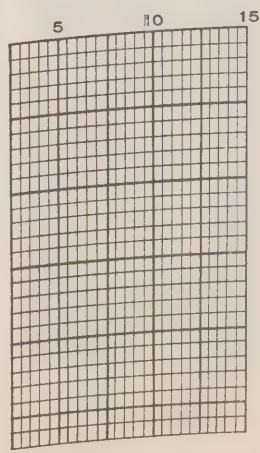
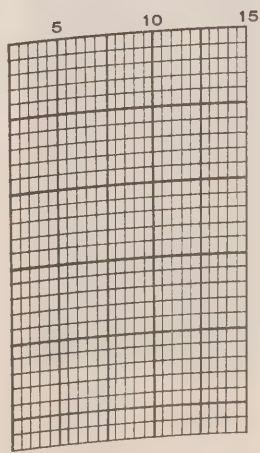
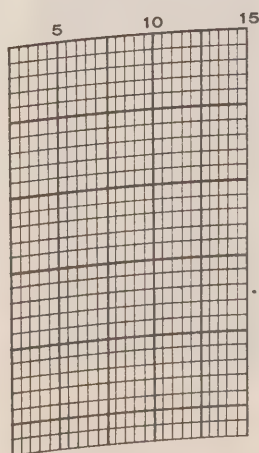
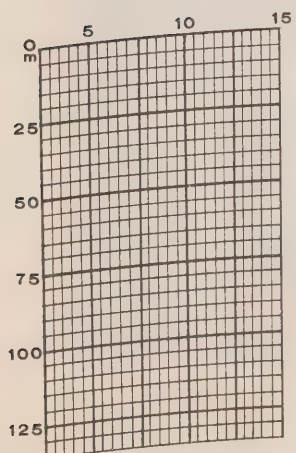
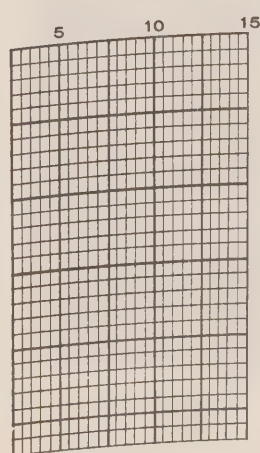
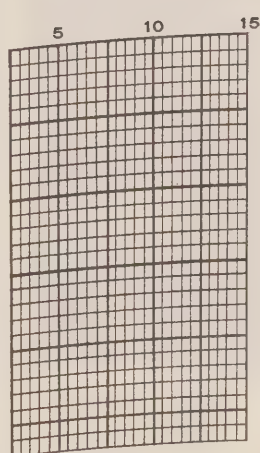
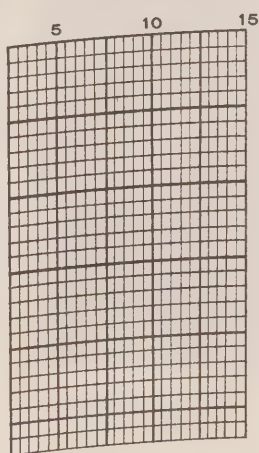
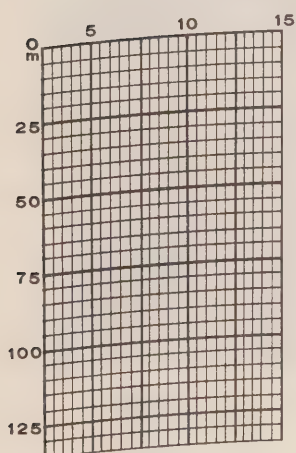
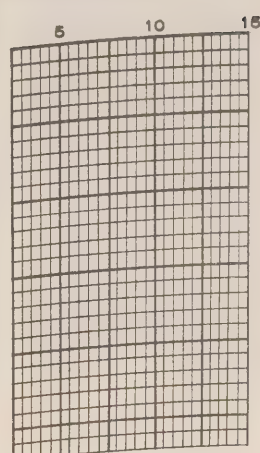
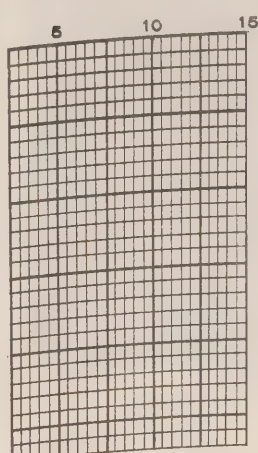
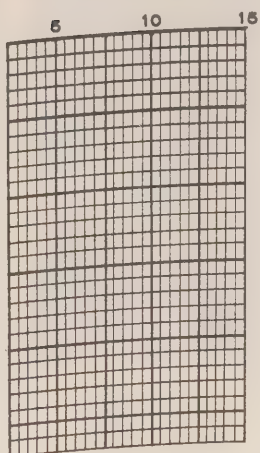
C.C.G.S. "St. Catharines", Survey P-63-3, OCEAN Series



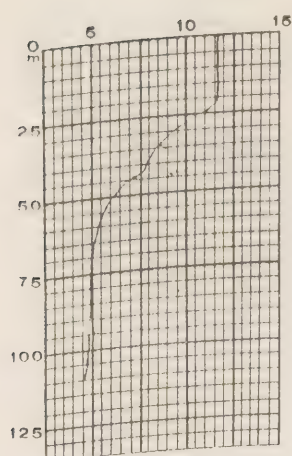
63-07-31-18.7

50° 03' N

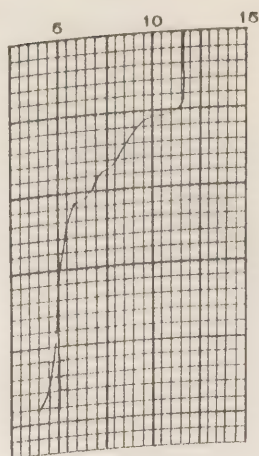
144° 57' W



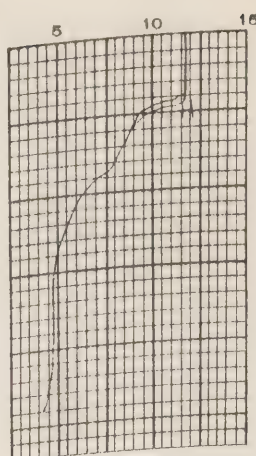
C.C.G.S. "St. Catharines", Survey P-63-3, Space-time series



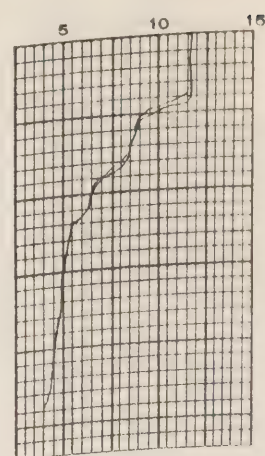
49° 59.6'n
145° 00.0'w



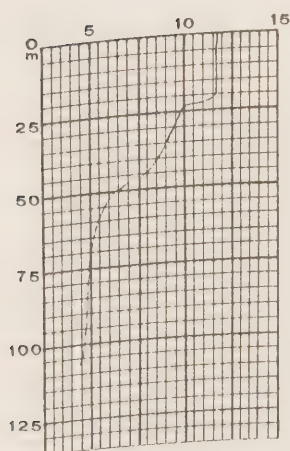
49° 59.5'n
144° 59.4'w



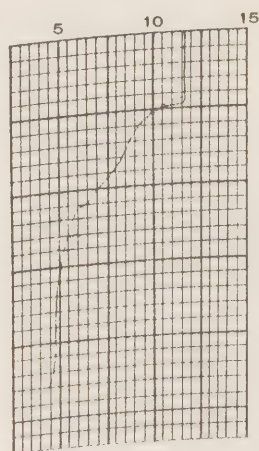
49° 59.9'n
144° 59.3'w



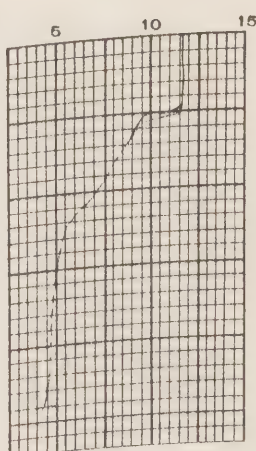
50° 00.3'n
144° 59.5'w



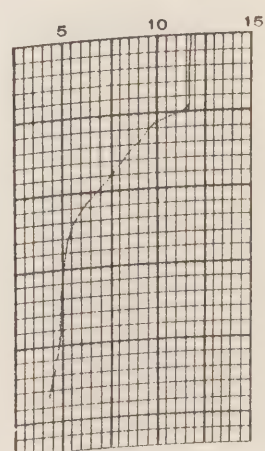
50° 00.5'n
145° 00.0'w



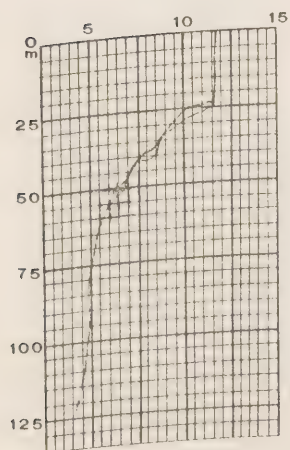
50° 00.5'n
145° 00.7'w



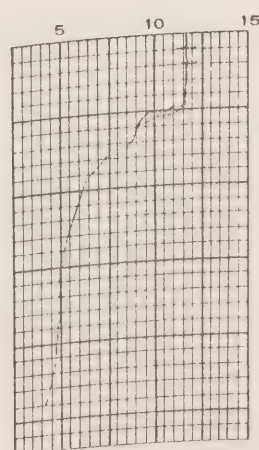
50° 00.2'n
145° 00.7'w



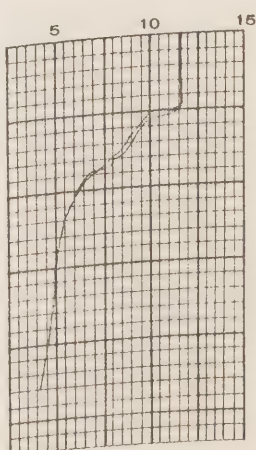
49° 59.7'n
145° 00.7'w



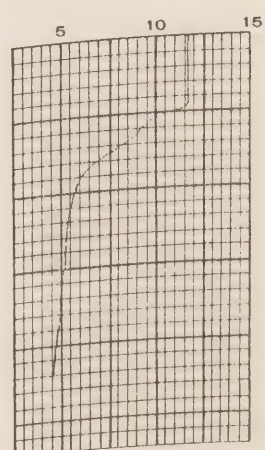
59° 59.2'n
145° 00.8'w



49° 59.1'n
145° 00.1'w

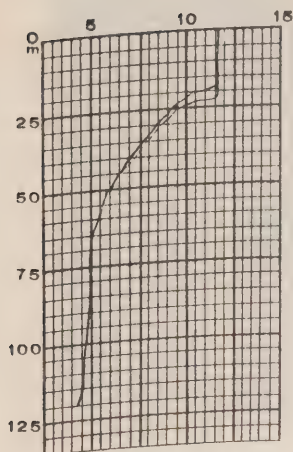


49° 59.0'n
144° 59.4'w

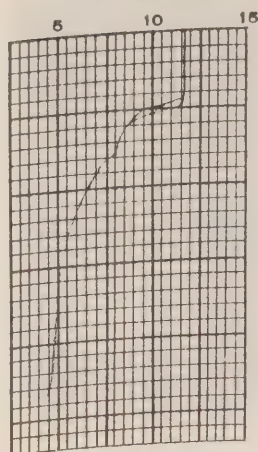


49° 59.0'n
144° 58.6'w

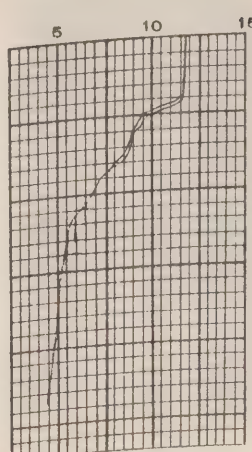
C.C.G.S. "St. Catharines", Survey P-63-3, Space-time series.



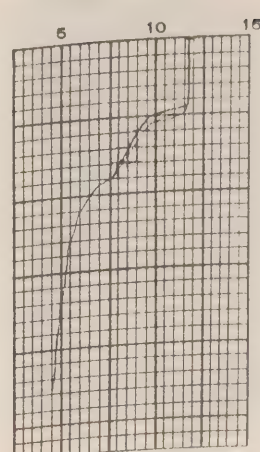
49° 59.5'N
144° 58.5'W



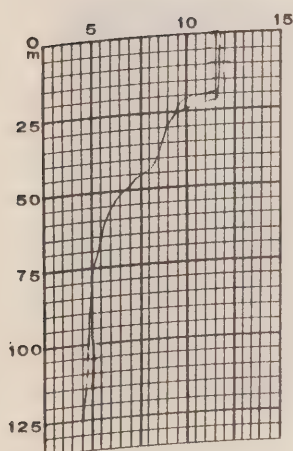
50° 00.0'N
144° 58.4'W



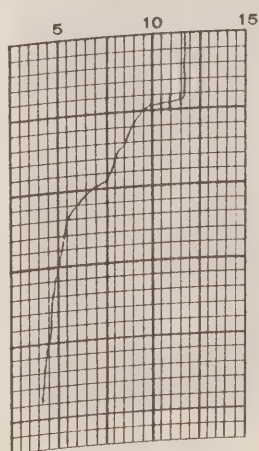
50° 00.5'N
144° 58.5'W



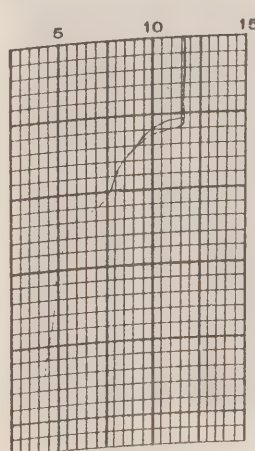
50° 01.0'N
144° 58.5'W



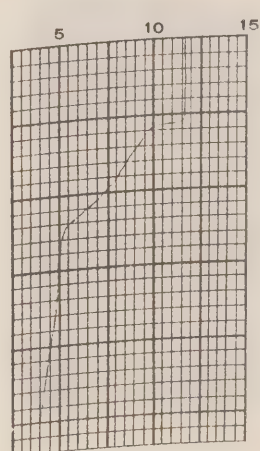
50° 01.0'N
144° 59.2'W



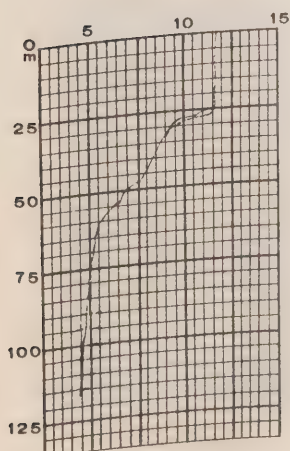
50° 01.1'N
144° 59.9'W



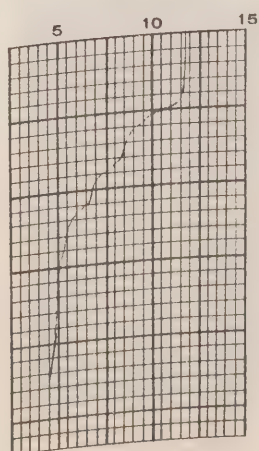
50° 01.0'N
145° 00.7'W



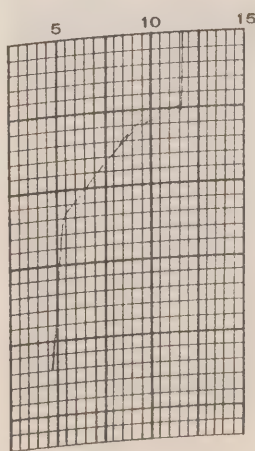
50° 01.0'N
145° 01.5'W



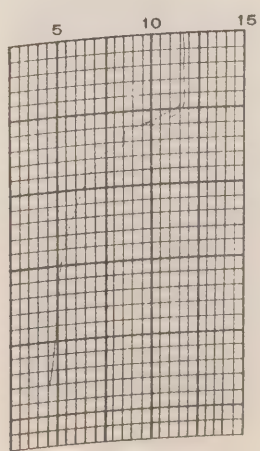
50° 00.6'N
145° 01.6'W



50° 00.1'N
145° 01.6'W

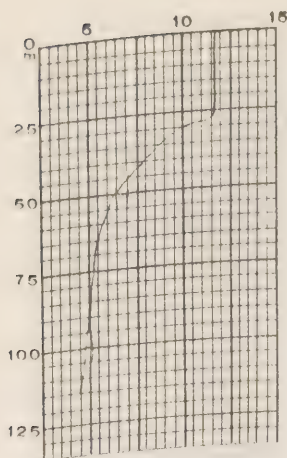


49° 59.7'N
145° 01.6'W

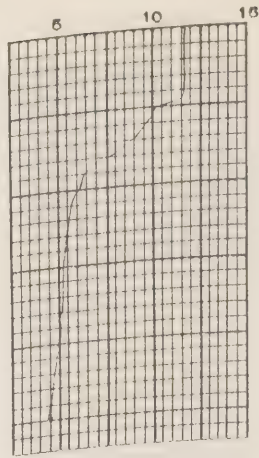


49° 59.1'N
145° 01.6'W

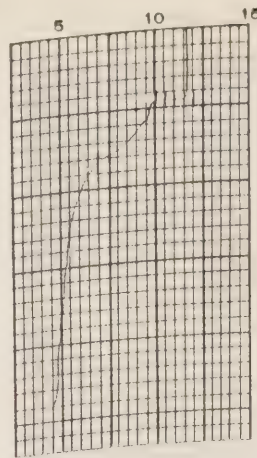
C.C.G.S. "St. Catharines", Survey P-63-3, Space-time series



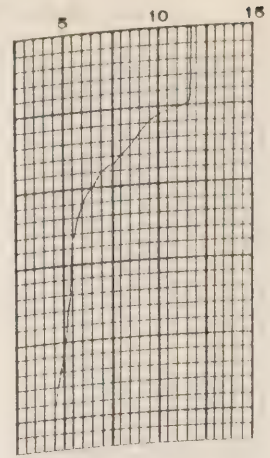
49° 58.5'N
145° 01.6'W



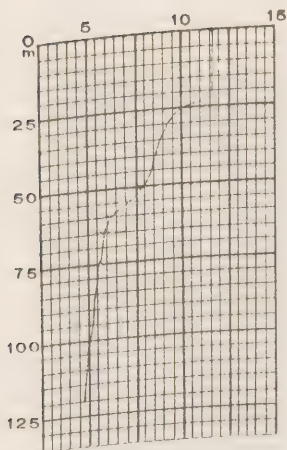
49° 58.5'N
145° 00.8'W



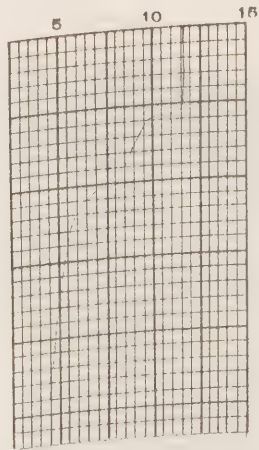
49° 58.5'N
145° 00.0'W



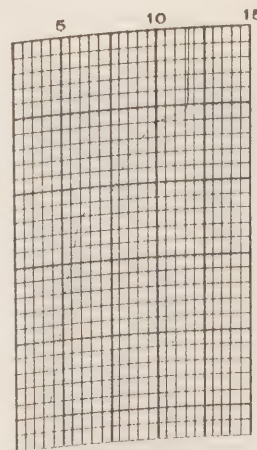
49° 58.5'N
144° 59.2'W



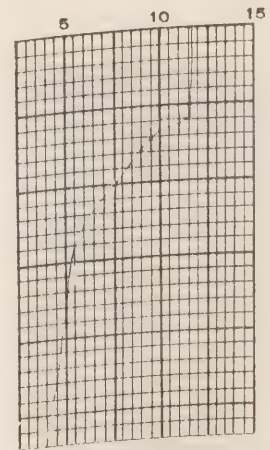
49° 58.5'N
144° 58.4'W



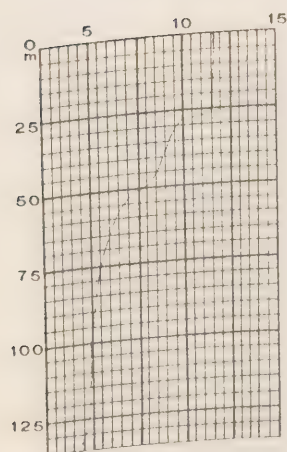
49° 58.5'N
144° 57.7'W



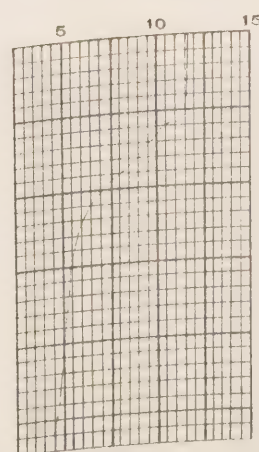
49° 59.0'N
144° 57.7'W



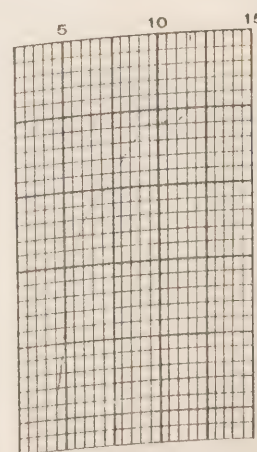
49° 59.5'N
144° 57.5'W



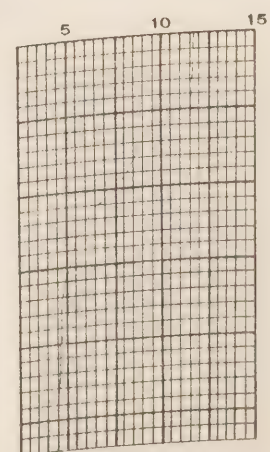
49° 59.9'N
144° 57.7'W



50° 00.3'N
144° 57.5'W



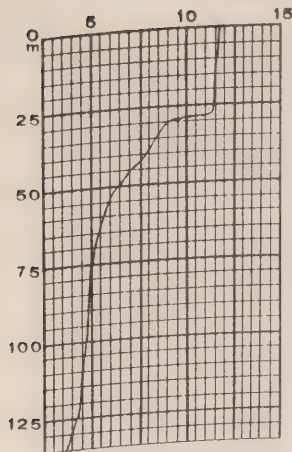
50° 00.9'N
144° 57.6'W



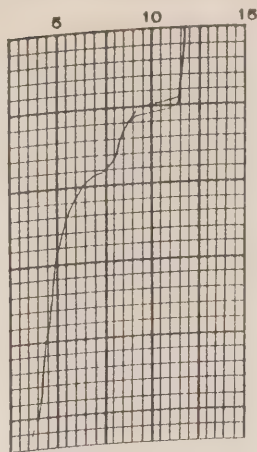
50° 01.3'N
144° 57.8'W

BTgms from 63-07-21-1020 to 63-07-21-1115 GMT.

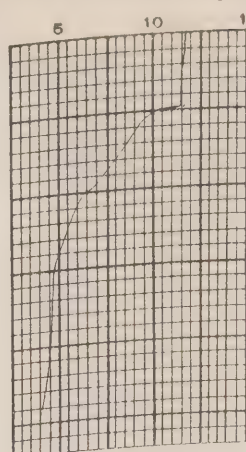
C.C.G.S. "St. Catharines", Survey P-63-3, Space-time series



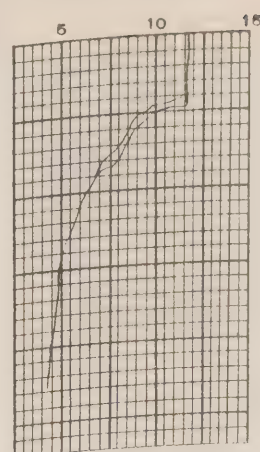
50° 01.5'N
144° 58.4'W



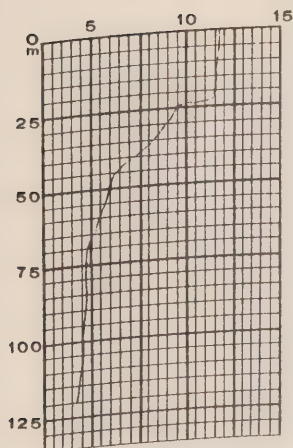
50° 01.6'N
144° 59.2'W



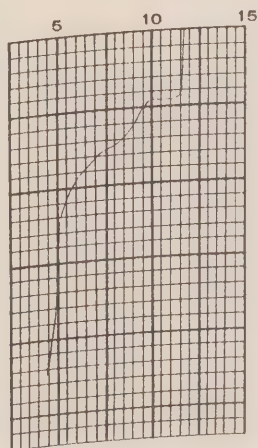
50° 01.6'N
144° 59.8'W



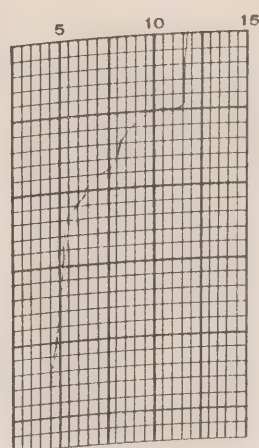
50° 01.5'N
145° 00.3'W



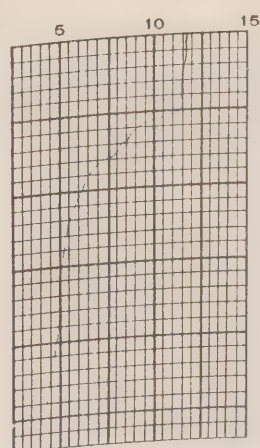
50° 01.5'N
145° 00.9'W



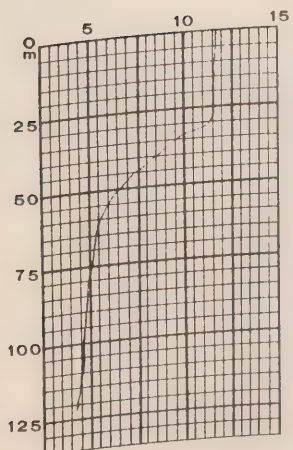
50° 01.5'N
145° 01.8'W



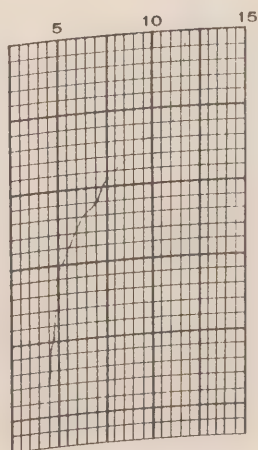
50° 01.0'N
145° 02.3'W



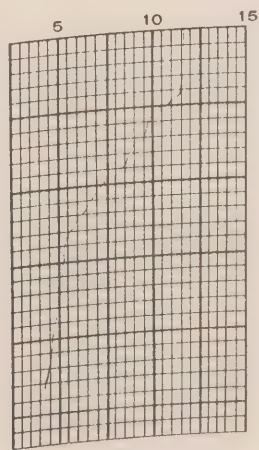
50° 00.5'N
145° 02.2'W



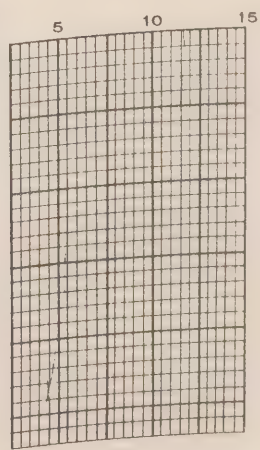
50° 00.1'N
145° 02.2'W



49° 59.5'N
145° 02.2'W

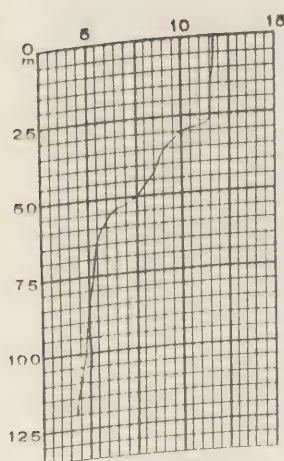


49° 59.0'N
145° 02.3'W

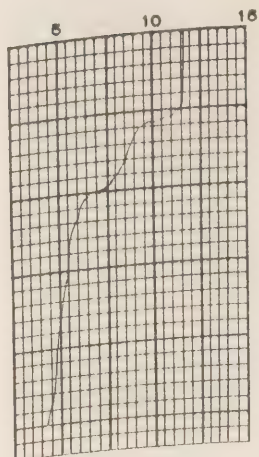


49° 58.4'N
145° 02.1'W

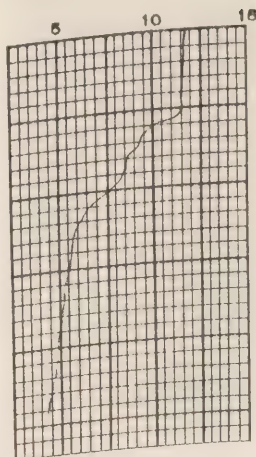
C.C.G.S. "St. Catharines," Survey P-63-3, Space-time series



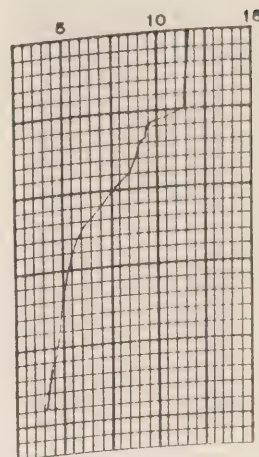
49° 58.0' N
145° 02.3' W



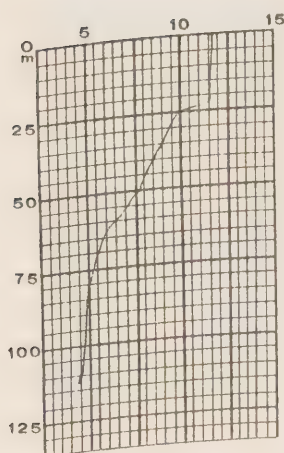
49° 57.8' N
145° 01.5' W



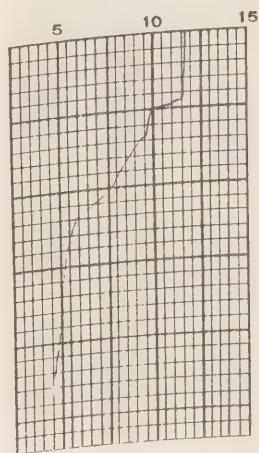
49° 57.8' N
145° 01.0' W



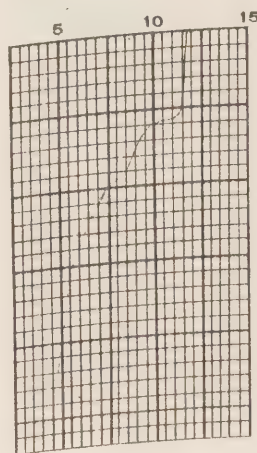
49° 57.8' N
145° 00.2' W



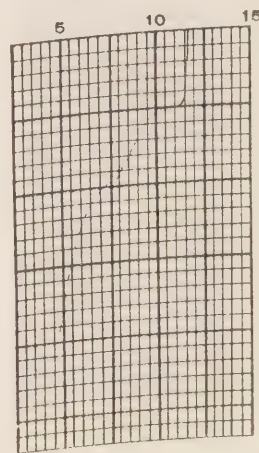
49° 57.9' N
144° 59.6' W



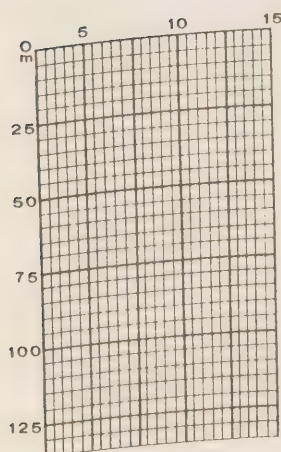
49° 58.0' N
144° 58.8' W



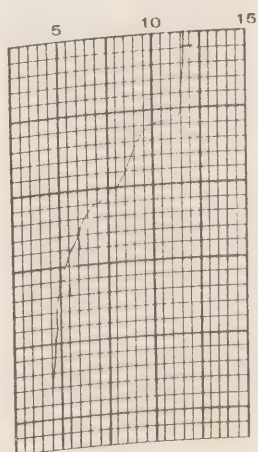
49° 57.9' N
144° 57.9' W



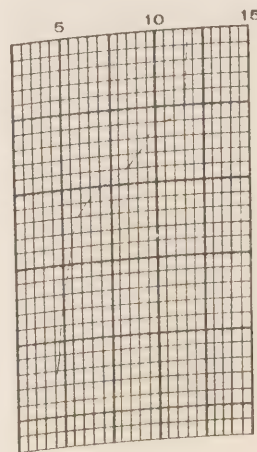
49° 58.0' N
144° 56.8' W



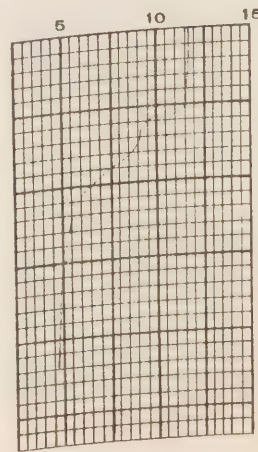
49° 58.8' N
144° 56.6' W



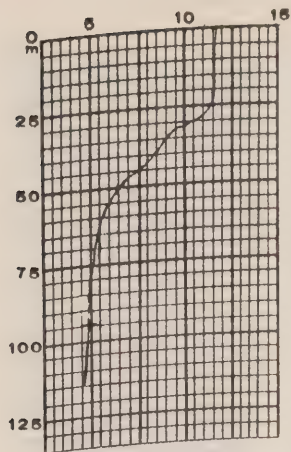
49° 59.5' N
144° 56.6' W



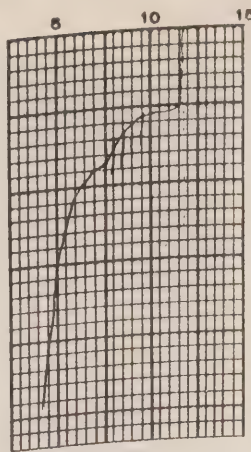
50° 00.0' N
144° 56.8' W



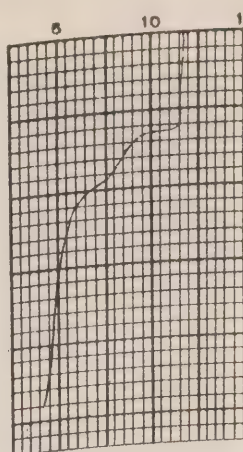
C.C.G.S. "St. Catharines," Survey P-63-3, Space-time series



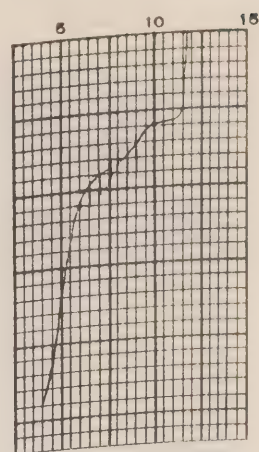
50° 00.6' n
144° 57.0' w



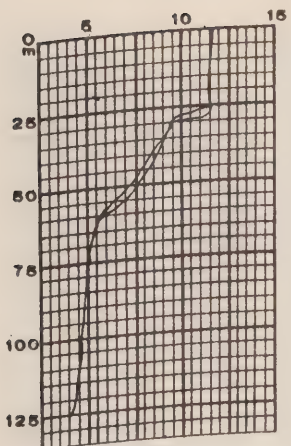
50° 01.0' n
144° 56.9' w



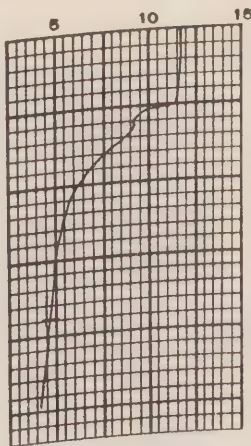
50° 01.6' n
144° 57.0' w



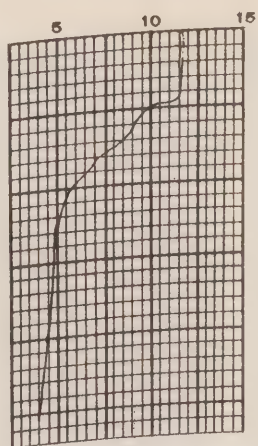
50° 02.0' n
144° 56.9' w



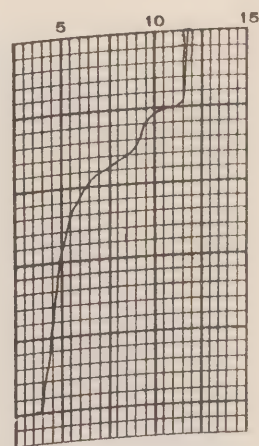
50° 02.2' n
144° 57.4' w



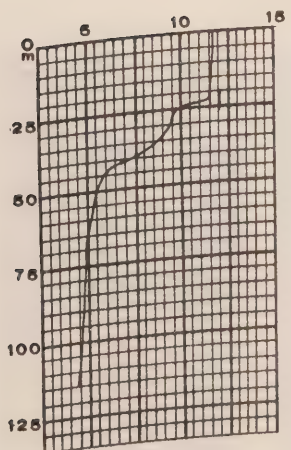
50° 02.3' n
144° 58.4' w



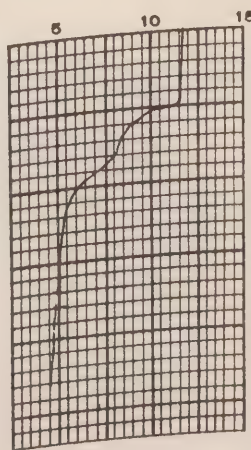
50° 02.3' n
144° 59.1' w



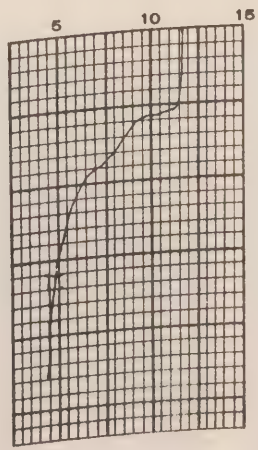
50° 02.1' n
145° 00.0' w



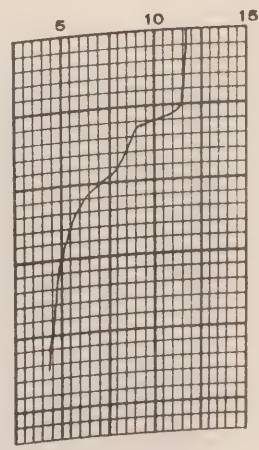
50° 02.0' n
145° 00.5' w



50° 02.0' n
145° 01.5' w



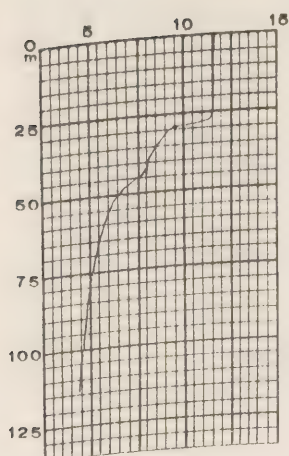
50° 02.0' n
145° 02.3' w



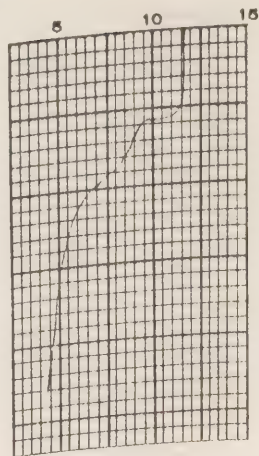
50° 02.0' n
145° 03.1' w

BTgms from 63-07-21-1435 to 63-07-21-1530 GMT.

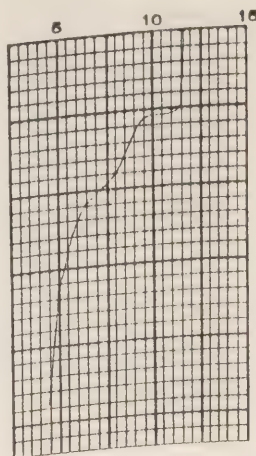
C.C.G.S. "St. Catharines", Survey P-63-3, Space-time series



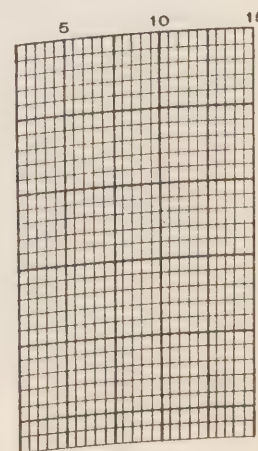
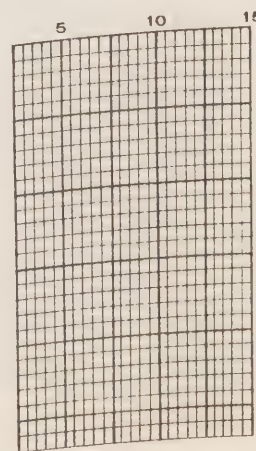
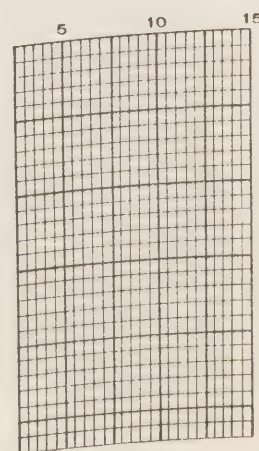
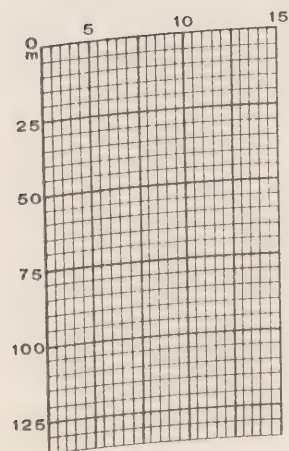
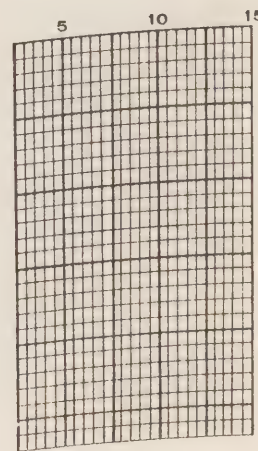
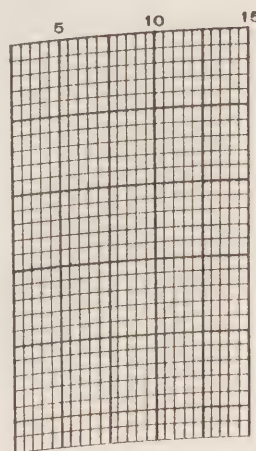
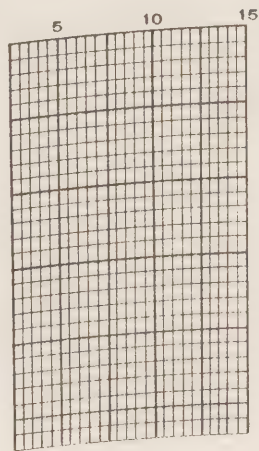
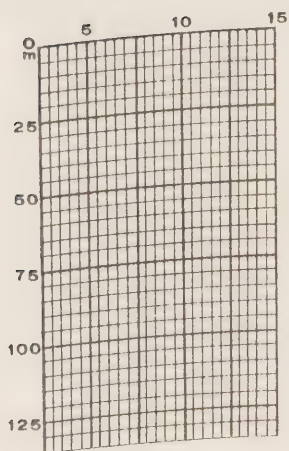
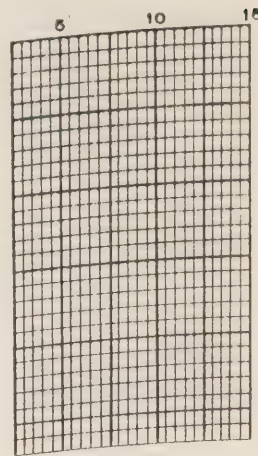
50° 01.6' N
145° 03.4' W



50° 01.0' N
145° 03.3' W



50° 00.4' N
145° 03.2' W



BTgms from 63-07-21-1535 to 63-07-21-1545 GMT

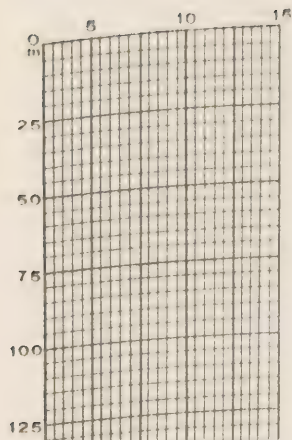
C.C.G.S. "STONETOWN" Patrol No. 57

Daily bathythermograms

and

OCEAN series bathythermograms

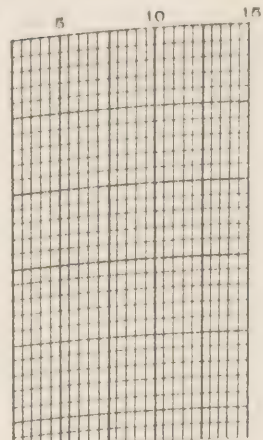
C.C.G.S. "Stonetown", Patrol No. 57



63-08-03-02.0

49° 50' n

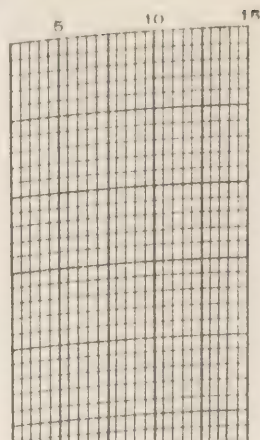
144° 21' w



63-08-04-02.0

49° 48' n

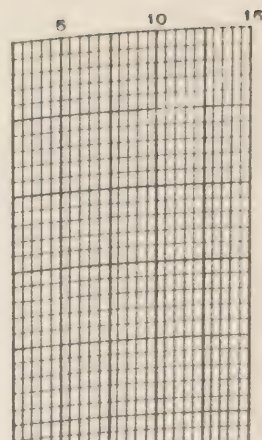
145° 08' w



63-08-05-02.0

50° 03' n

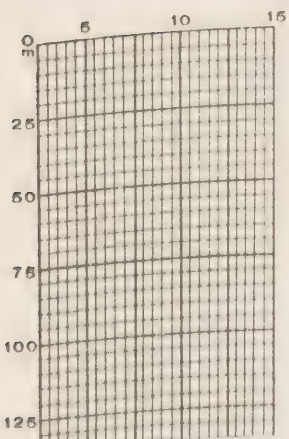
145° 02' w



63-08-06-02.0

49° 56' n

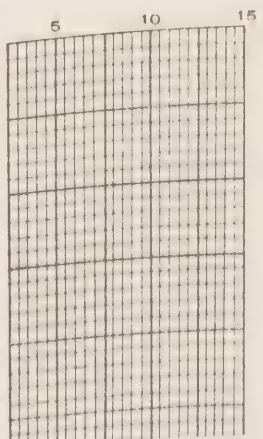
145° 17' w



63-08-07-02.0

50° 01' n

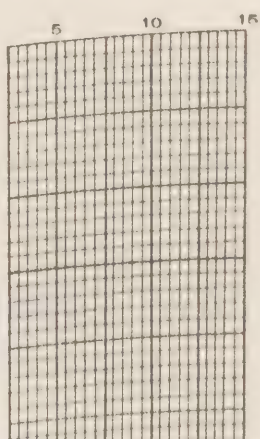
145° 04' w



63-08-08-02.0

50° 00' n

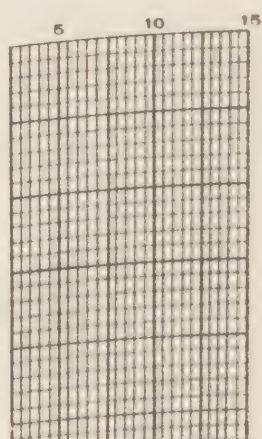
144° 56' w



63-08-09-02.0

50° 10' n

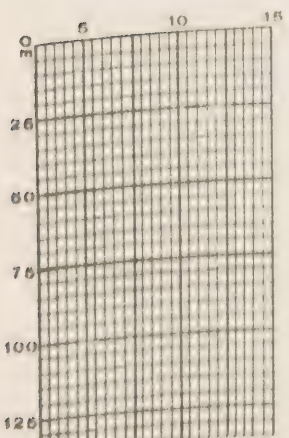
144° 52' w



63-08-10-02.0

50° 03' n

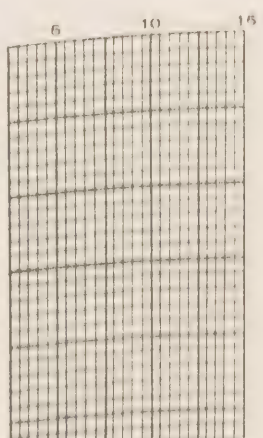
145° 01' w



63-08-11-02.0

50° 00' n

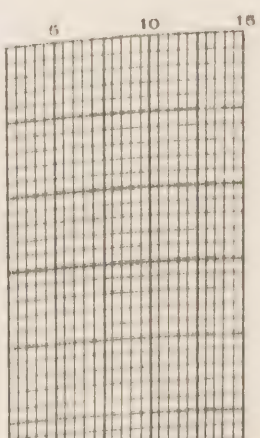
145° 18' w



63-08-12-02.0

49° 47' n

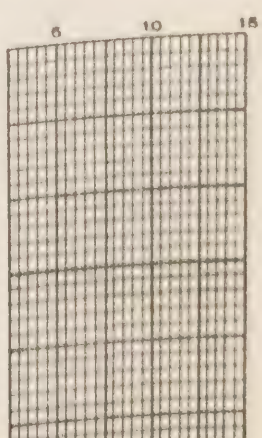
145° 04' w



63-08-13-02.0

49° 56' n

144° 59' w

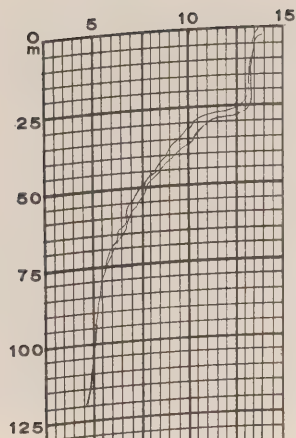


63-08-14-02.0

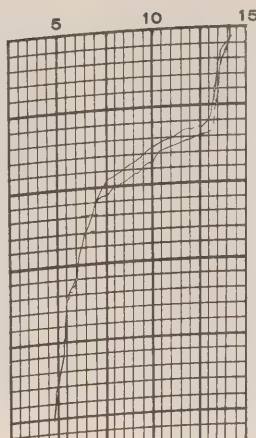
49° 59' n

144° 59' w

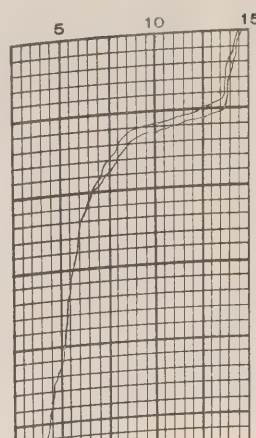
C.C.G.S. "Stonetown", Patrol No. 57



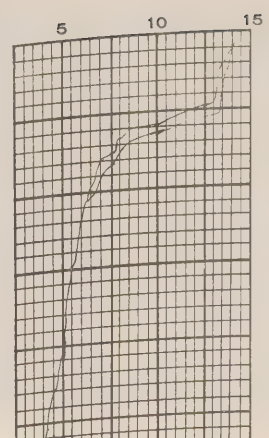
63-08-15-02.0
49° 55' n
144° 42' w



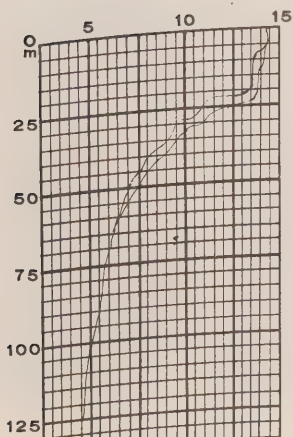
63-08-16-02.0
50° 02' n
145° 03' w



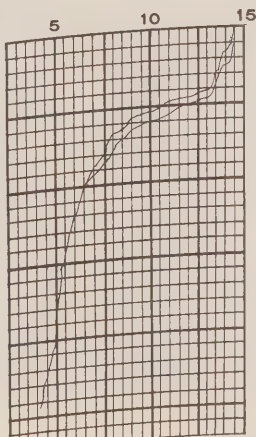
63-08-17-02.0
50° 06' n
145° 15' w



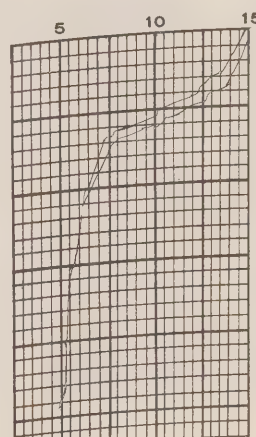
63-08-18-02.0
50° 00' n
145° 01' w



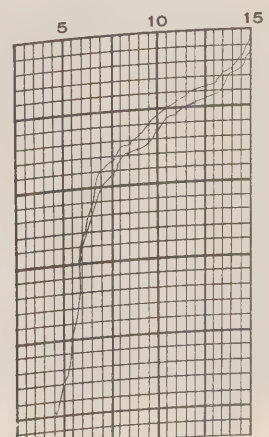
63-08-19-02.0
50° 04' n
144° 51' w



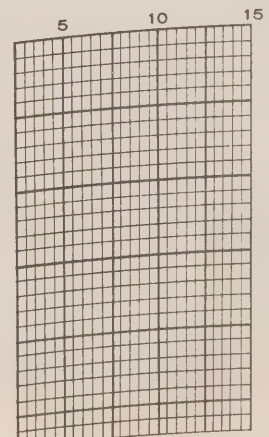
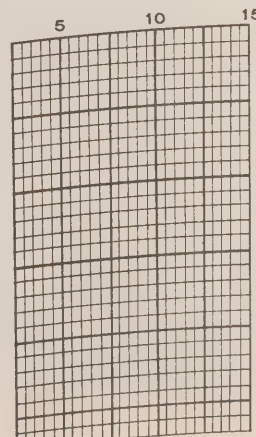
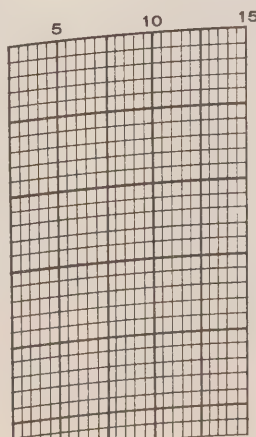
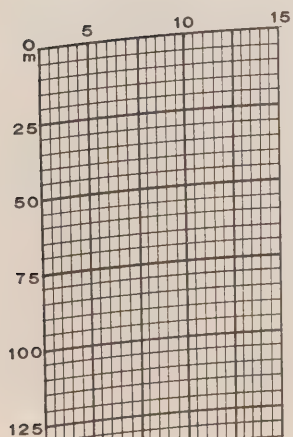
63-08-20-02.0
50° 05' n
144° 52' w



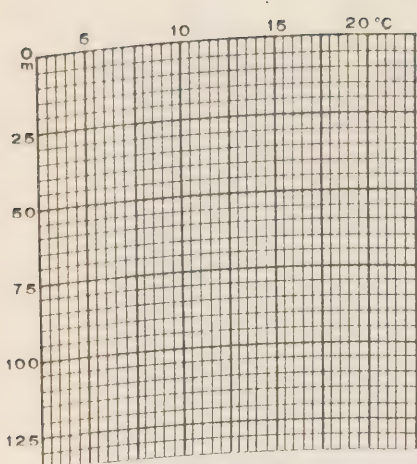
63-08-21-02.0
49° 59' n
144° 57' w



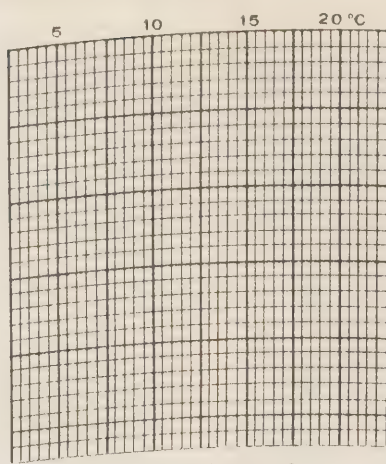
63-08-22-02.0
50° 04' n
144° 53' w



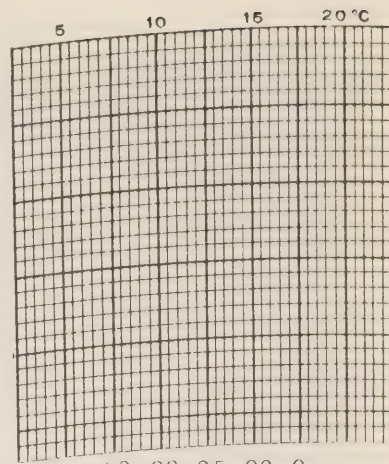
C.C.G.S. "Stonetown", Patrol No. 57



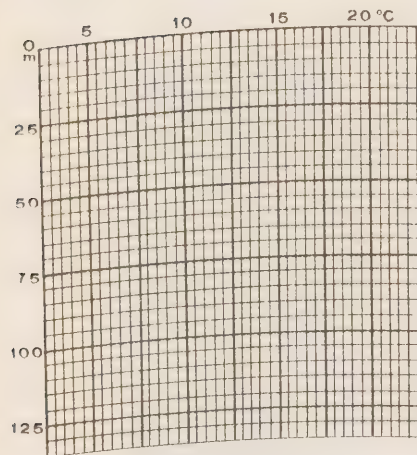
63-08-23-02.0
 50° 03' n
 144° 58' w



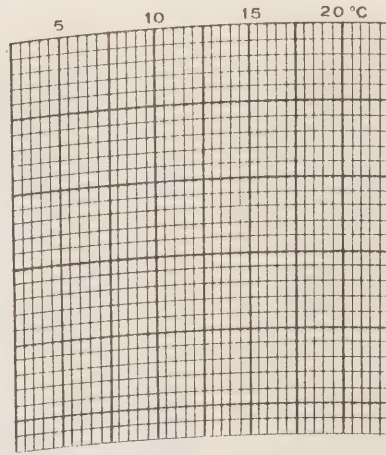
63-08-24-02.0
 49° 57' n
 145° 04' w



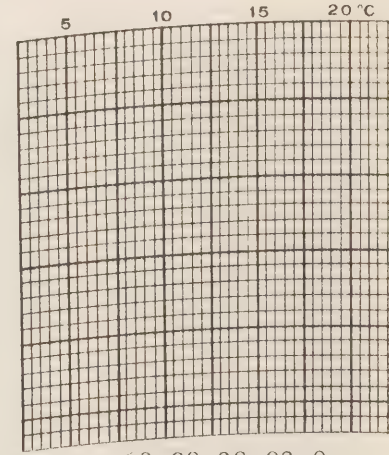
63-08-25-02.0
 50° 10' n
 145° 09' w



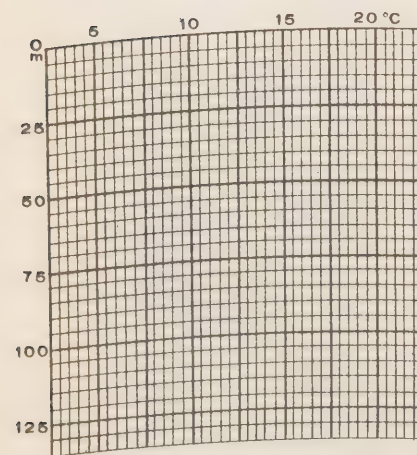
63-08-26-02.0
 50° 00' n
 145° 00' w



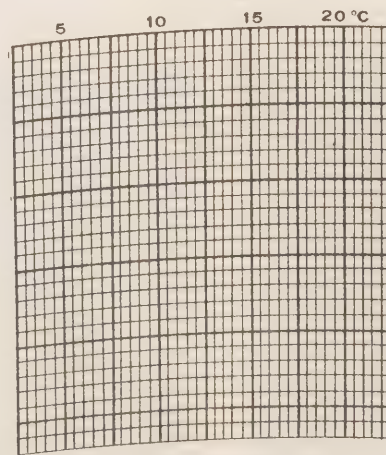
63-08-27-02.0
 50° 04' n
 145° 06' w



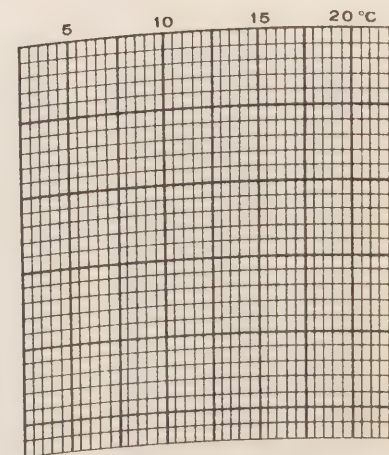
63-08-28-02.0
 50° 06' n
 145° 10' w



63-08-29-02.0
 50° 07' n
 145° 00' w

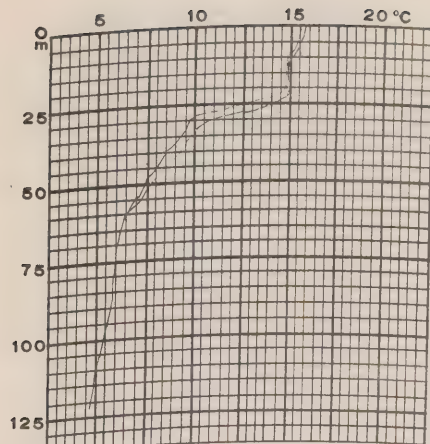


63-08-30-02.0
 49° 55' n
 144° 52' w

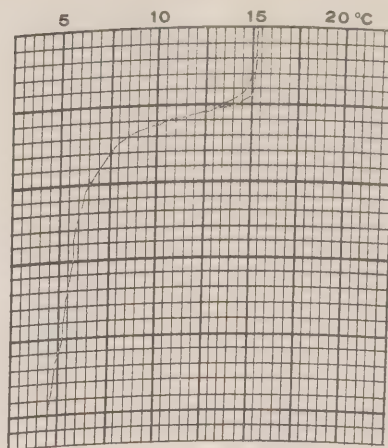


63-08-31-02.0
 50° 08' n
 145° 04' w

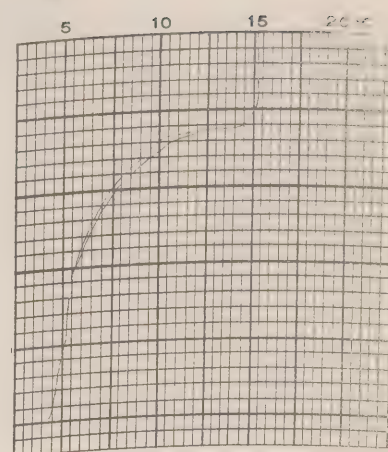
C C G S. "Stonetown", Patrol No. 57



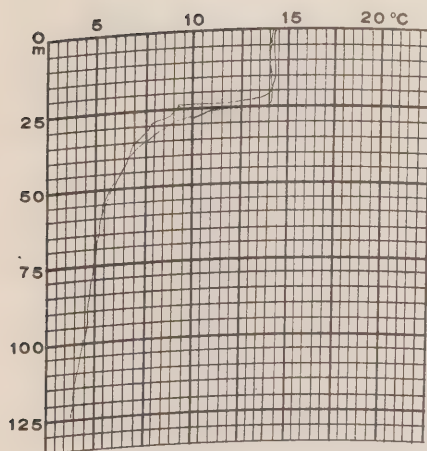
63-09-01-02.0
50° 05' N
145° 05' W



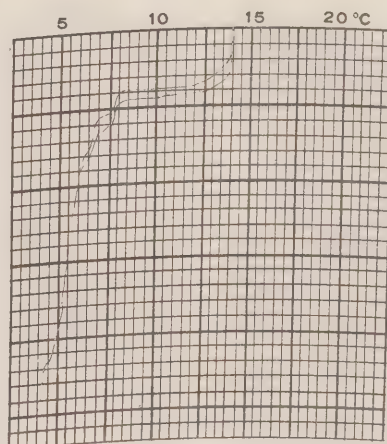
63-09-02-02.0
50° 05' N
144° 58' W



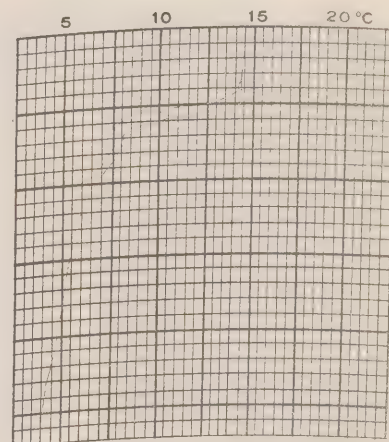
63-09-03-02.0
50° 01' N
145° 02' W



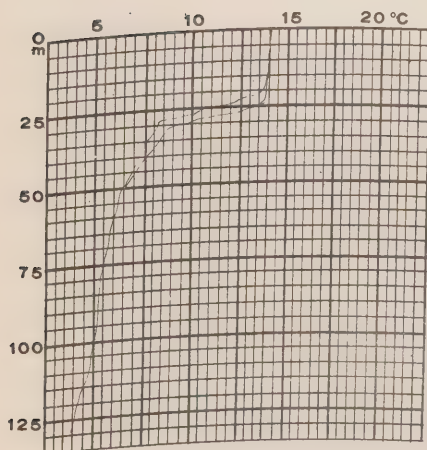
63-09-05-02.0
50° 02' N
145° 03' W



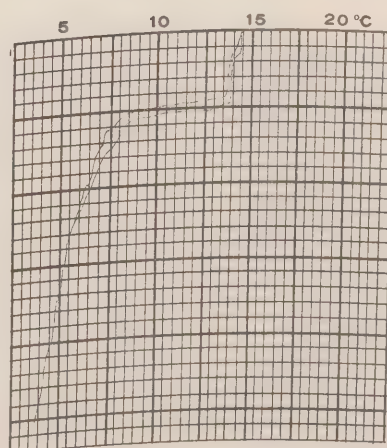
63-09-06-02.0
49° 58' N
145° 04' W



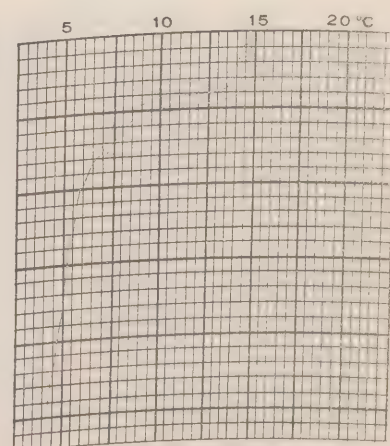
63-09-07-02.0
50° 09' N
144° 51' W



63-09-08-02.0
50° 01' N
144° 59' W

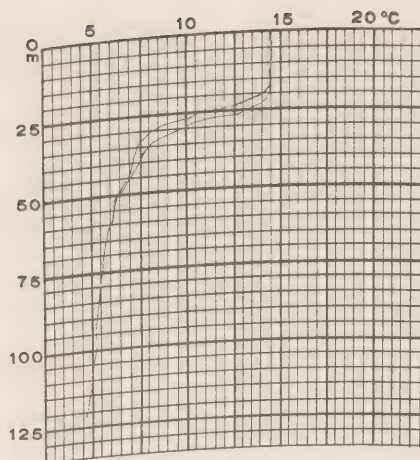


63-09-09-02.0
50° 04' N
145° 00' W



63-09-10-02.0
50° 05' N
145° 04' W

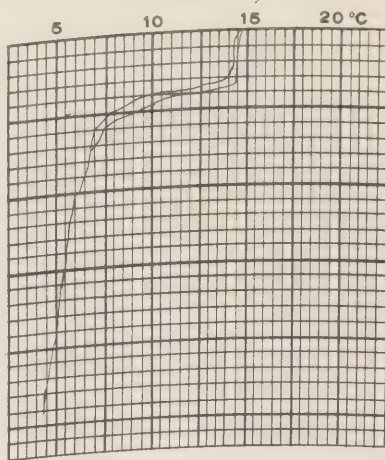
C.C.G.S. "Stonetown", Patrol No. 57



63-09-11-02.0

49° 56' n

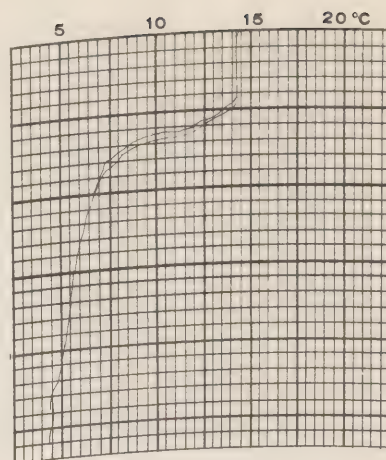
145° 02' w



63-09-12-02.0

50° 01' n

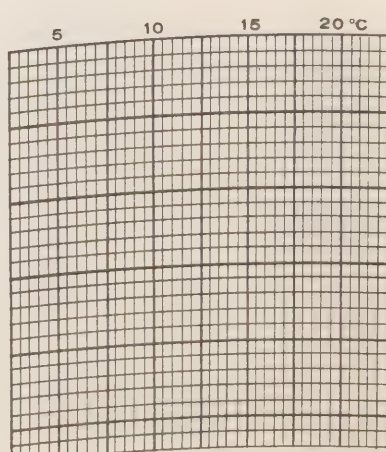
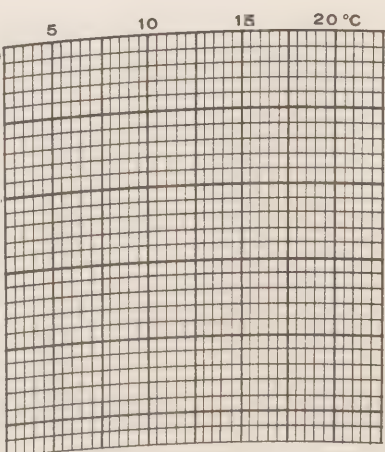
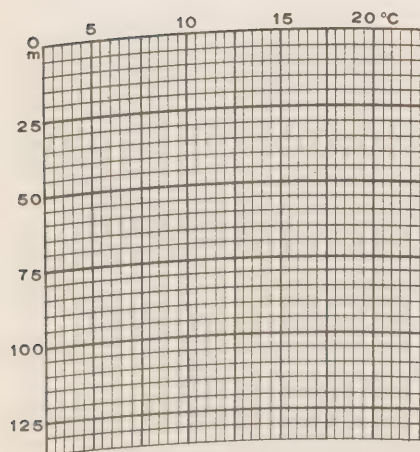
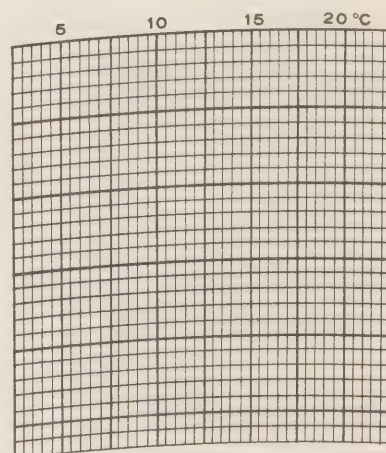
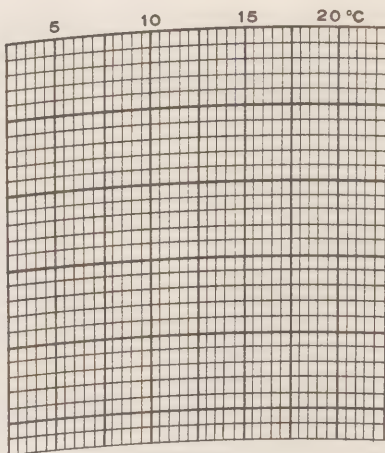
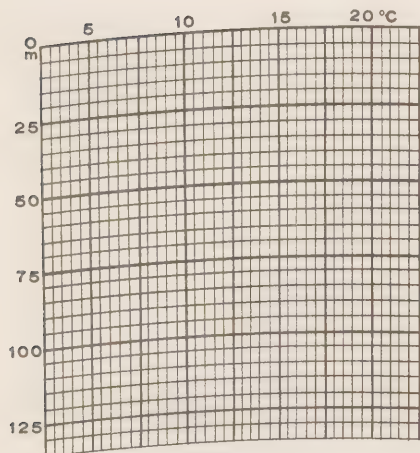
144° 58' w



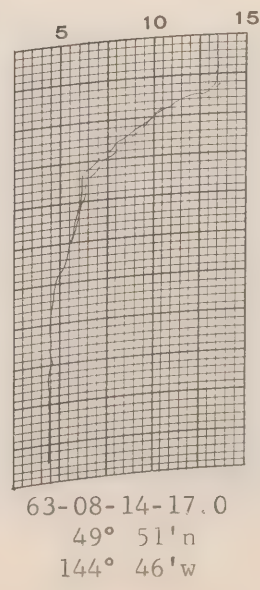
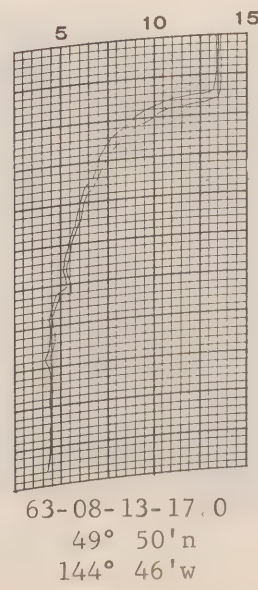
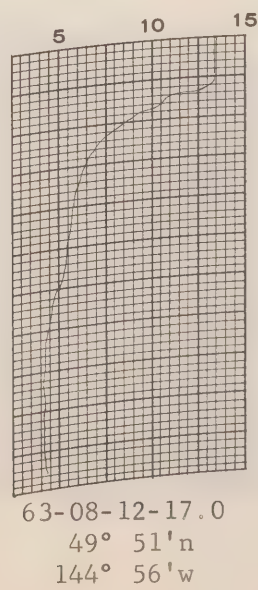
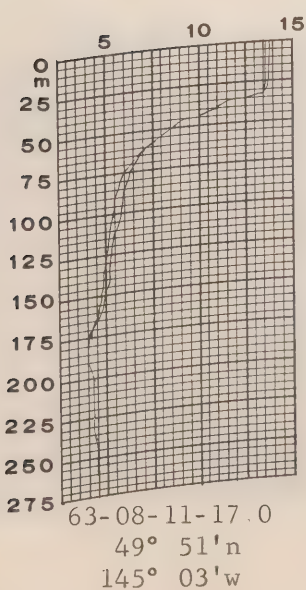
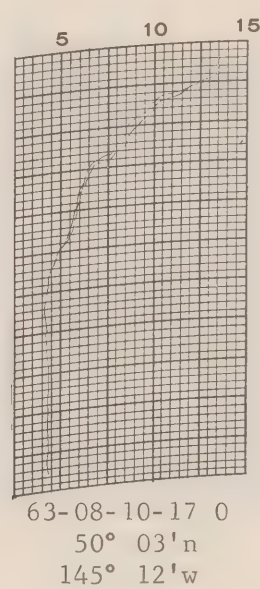
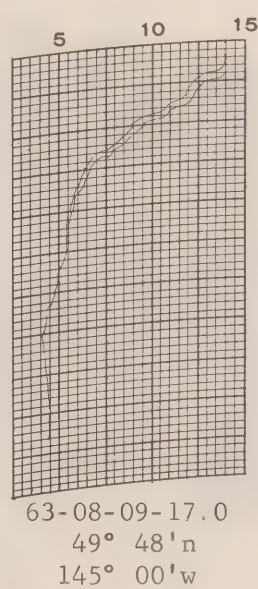
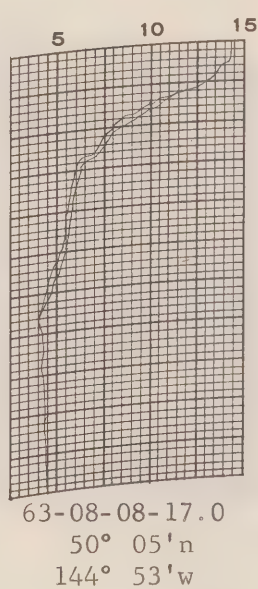
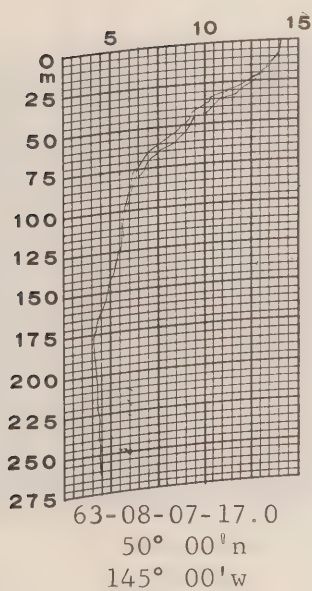
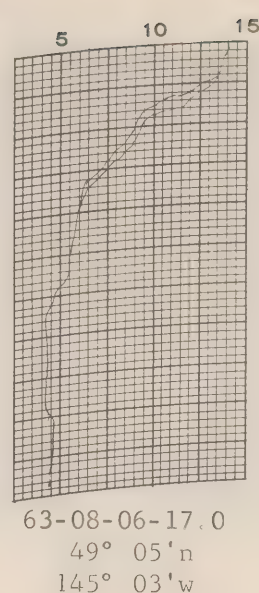
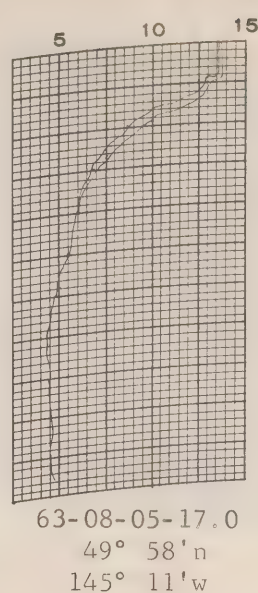
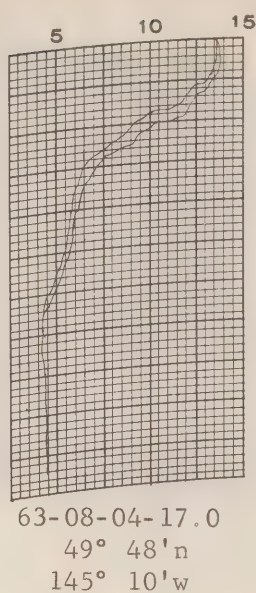
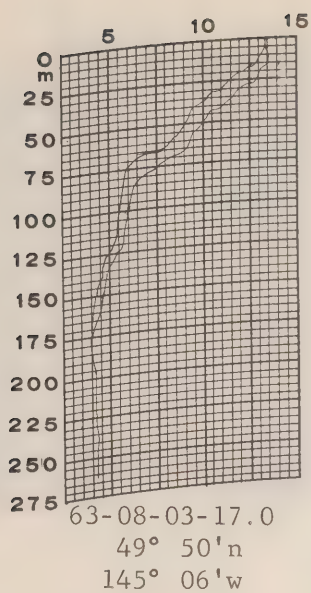
63-09-13-02.0

50° 00' n

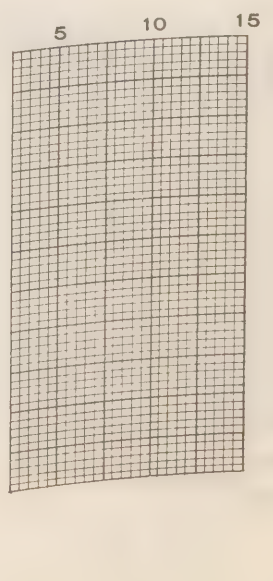
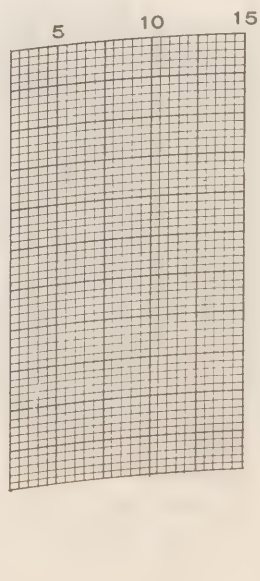
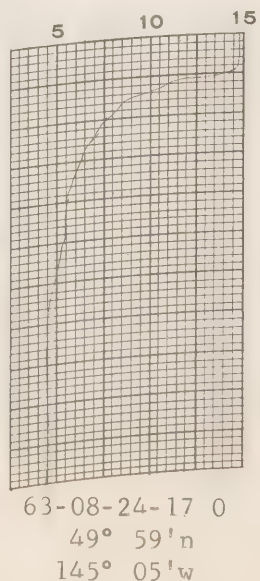
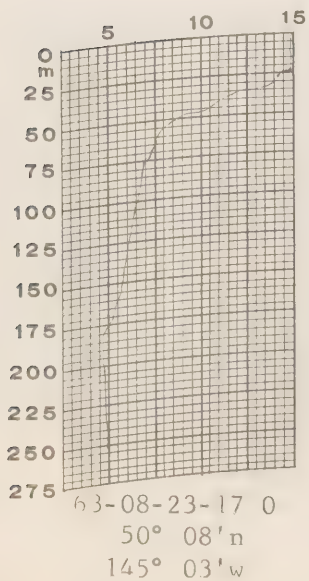
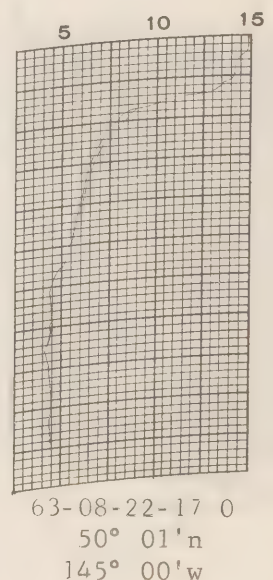
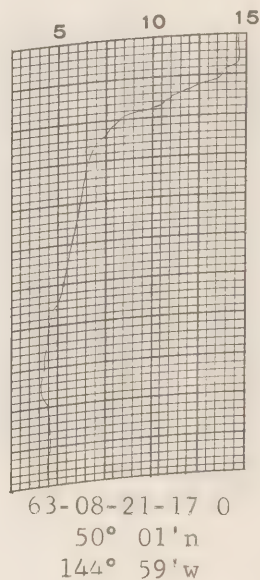
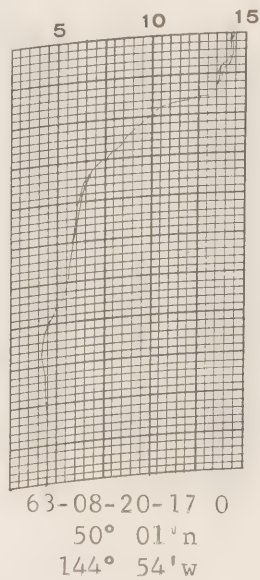
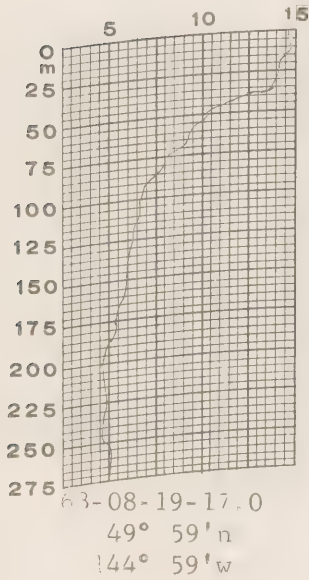
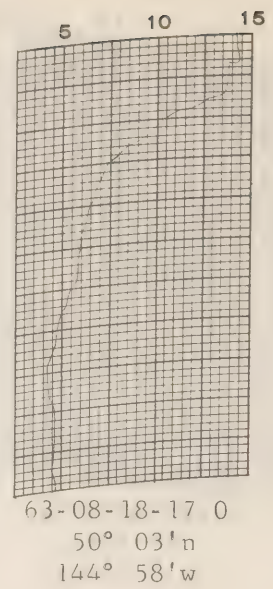
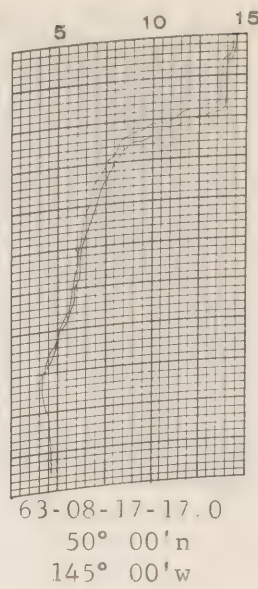
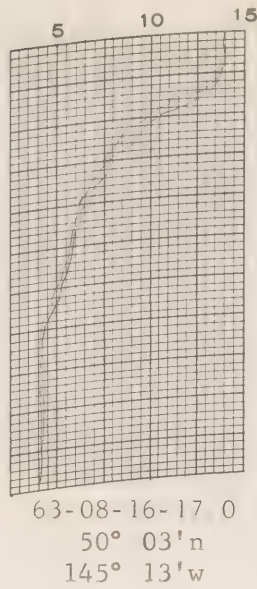
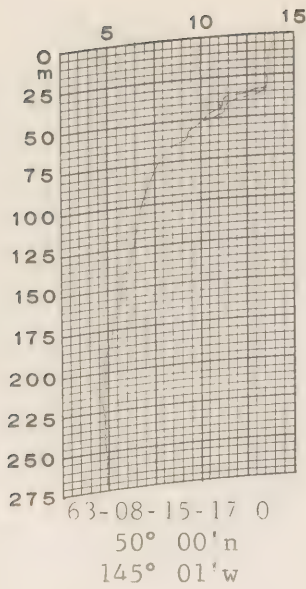
145° 06' w



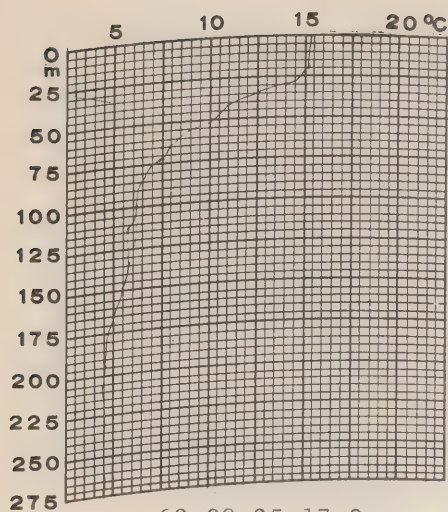
C.C.G.S. "Stonetown", Patrol No. 57



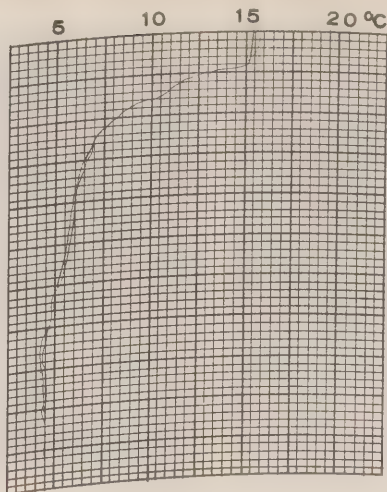
C C G S "Stonetown", Patrol No. 57



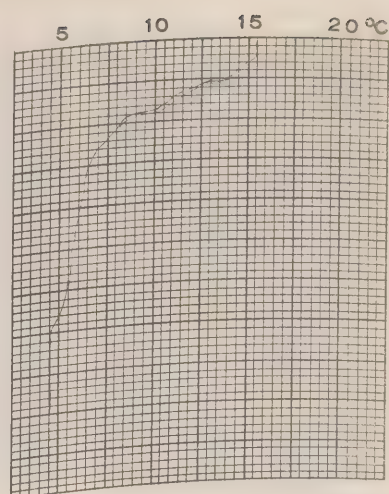
C.C.G.S. "Stonetown", Patrol No. 57



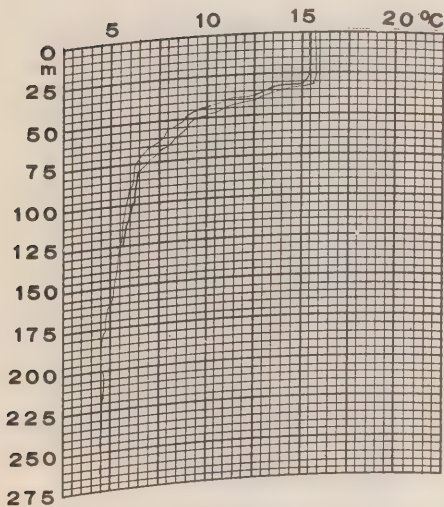
63-08-25-17.0
50° 01' n
145° 00' w



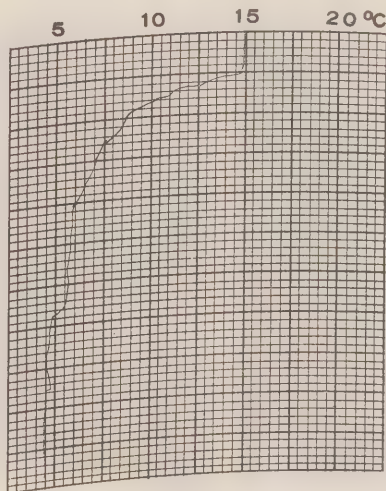
63-08-26-17.0
50° 00' n
145° 01' w



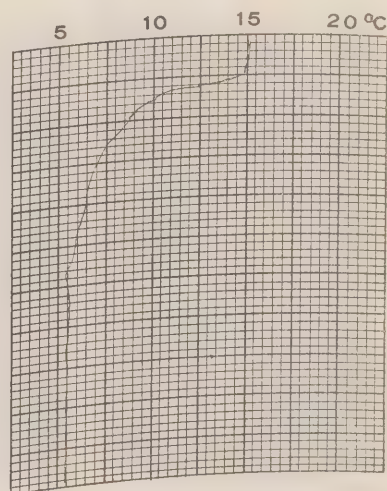
63-08-27-17.0
50° 01' n
144° 56' w



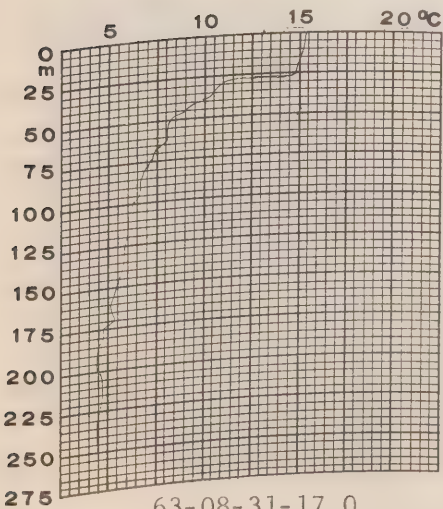
63-08-28-17.0
50° 01' n
144° 58' w



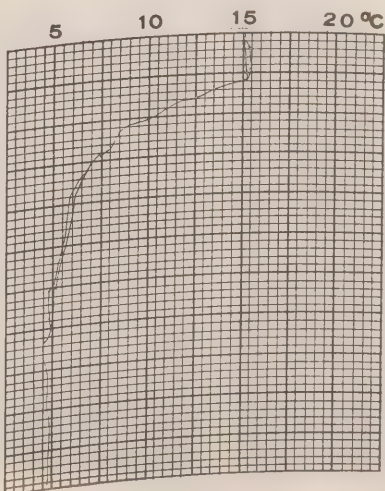
63-08-29-17.0
50° 10' n
145° 08' w



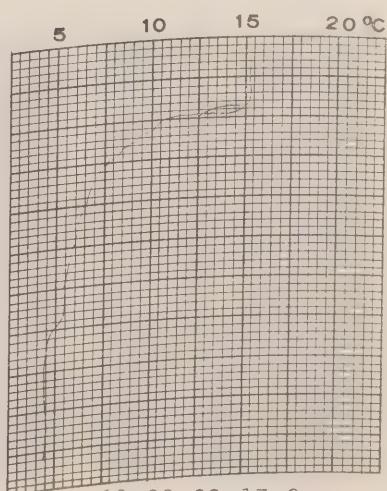
63-08-30-17.0
50° 00' n
145° 02' w



63-08-31-17.0
50° 01' n
145° 00' w

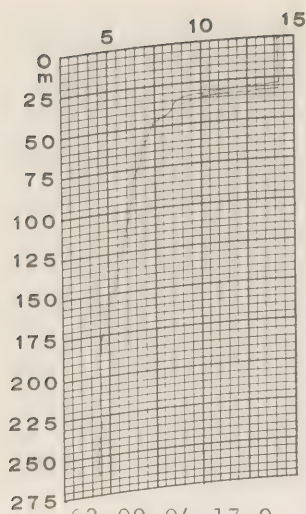


63-09-01-17.0
50° 03' n
145° 00' w

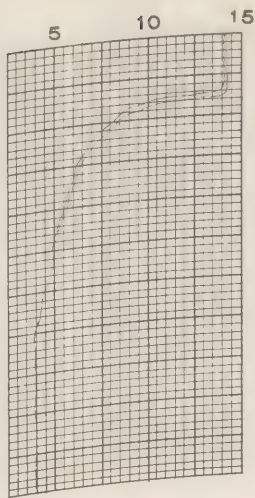


63-09-02-17.0
50° 04' n
144° 55' w

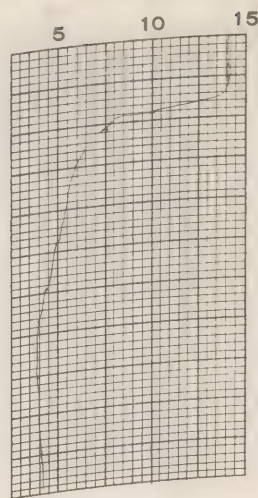
C.C.G.S. "Stonetown", Patrol No 57



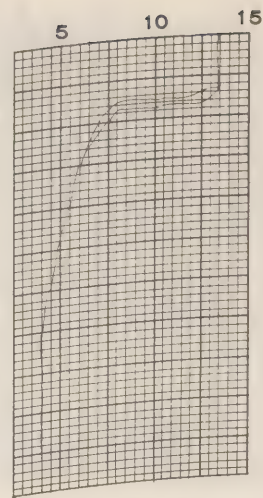
63-09-04-17 0
49° 57' n
145° 05' w



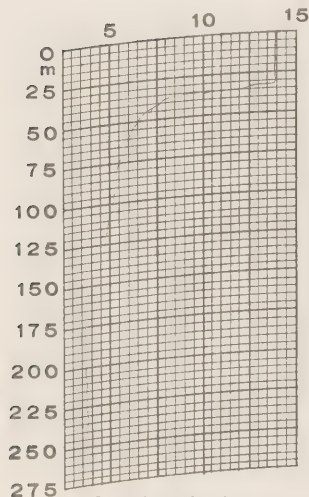
63-09-05-17 0
50° 00' n
145° 01' w



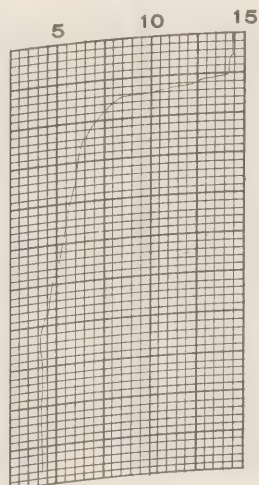
63-09-06-17 0
50° 01' n
144° 59' w



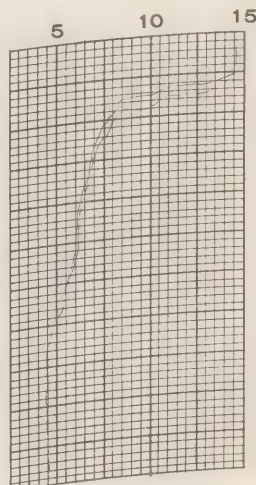
63-09-07-17.0
50° 01' n
144° 56' w



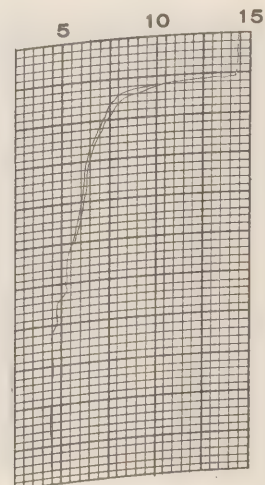
63-09-08-17 0
50° 00' n
145° 02' w



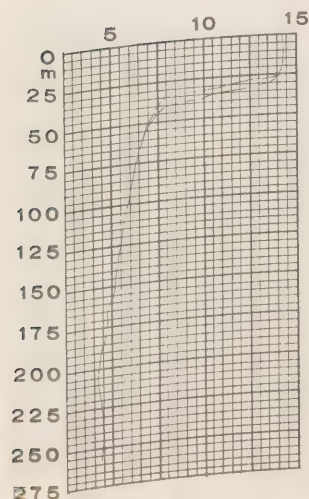
63-09-09-17.0
50° 01' n
145° 00' w



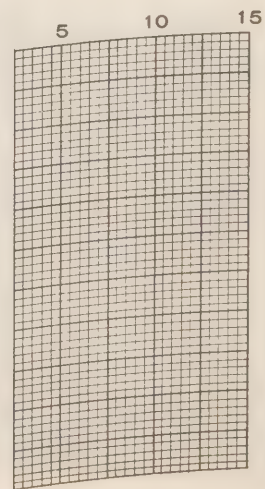
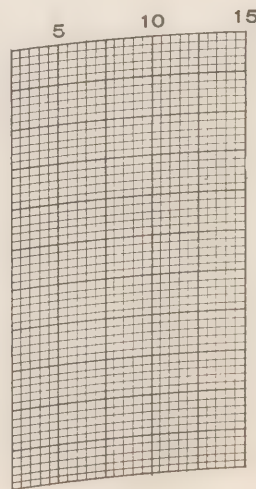
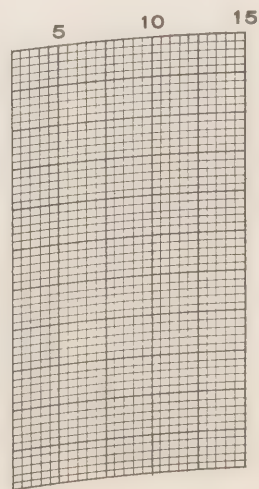
63-09-10-17 0
49° 59' n
144° 59' w



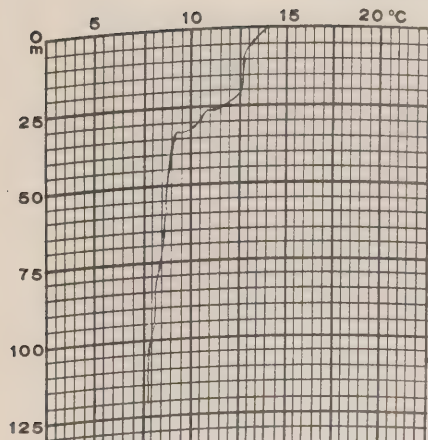
63-09-11-17.0
50° 00' n
144° 59' w



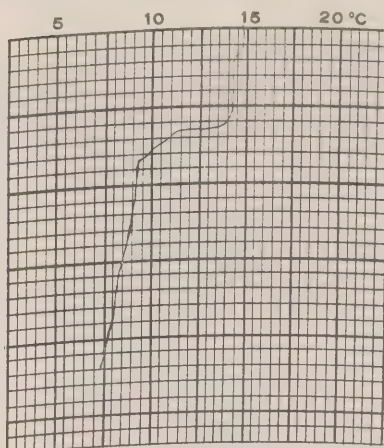
63-09-12-17.0
50° 00' n
145° 00' w



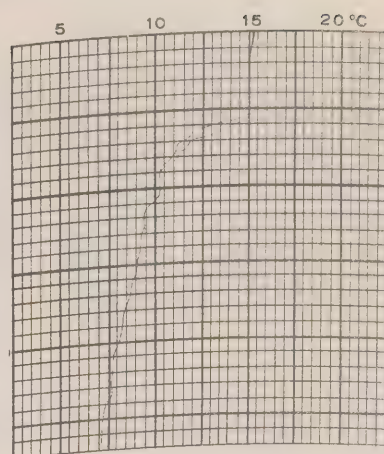
C.C.G.S. "Stonetown", Patrol No. 57, OCEAN Series



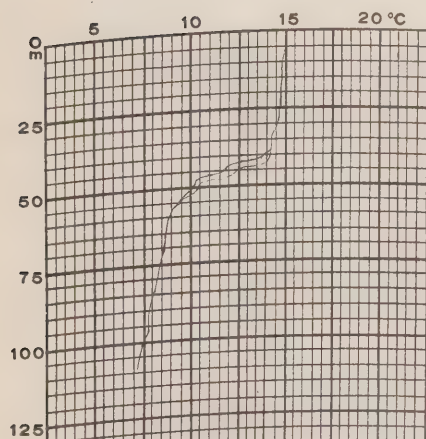
63-07-31-04.5
48° 42' n
126° 49' w



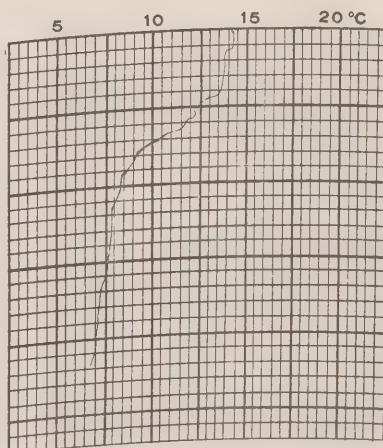
63-07-31-10.7
48° 42' n
128° 40' w



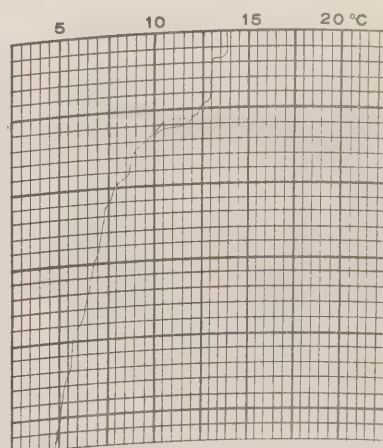
63-07-31-17.7
48° 59' n
130° 40' w



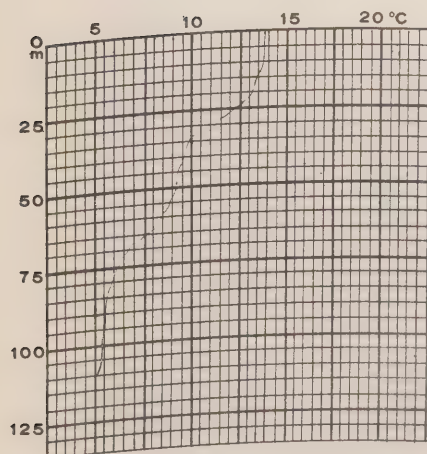
63-08-01-01.3
49° 07' n
132° 40' w



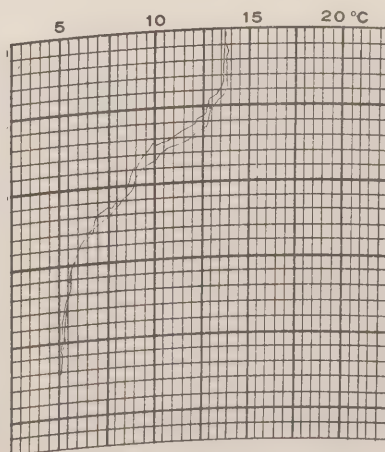
63-08-01-14.8
49° 25' n
136° 40' w



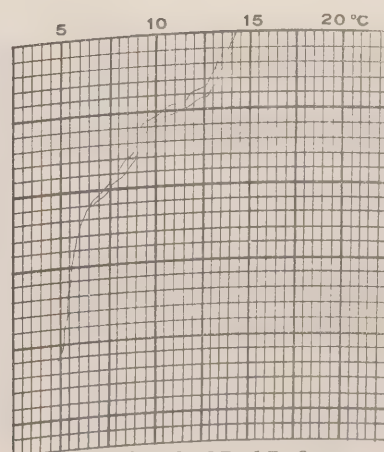
63-08-02-05.5
49° 43' n
140° 40' w



63-08-03-17.3
49° 50' n
145° 06' w

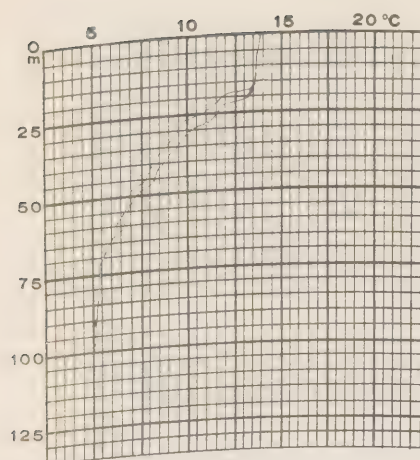


63-08-05-18.2
49° 58' n
145° 11' w

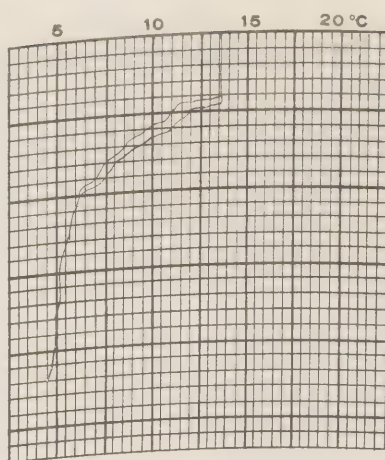


63-08-07-17.3
50° 00' n
145° 00' w

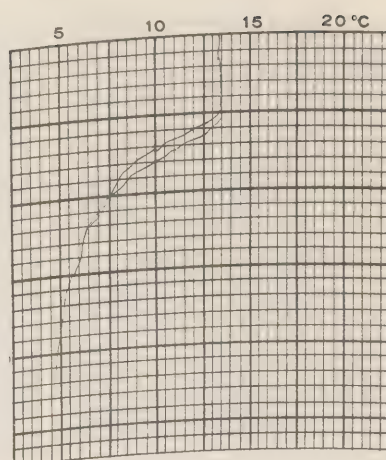
C.C.G.S. "Stonetown", Patrol No 57, OCEAN Series



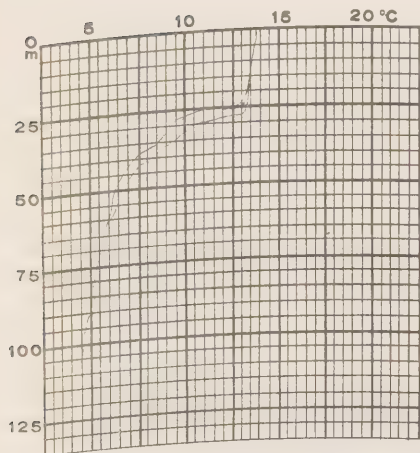
63-08-09-17.8
49° 48' n
145° 00' w



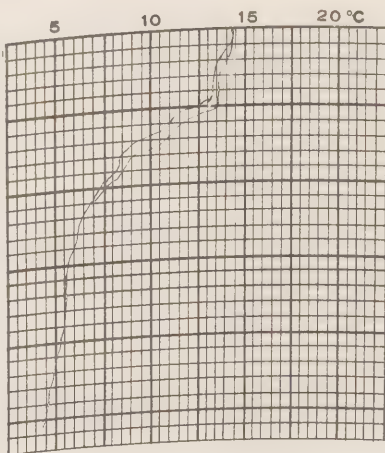
63-08-11-17.7
49° 51' n
145° 03' w



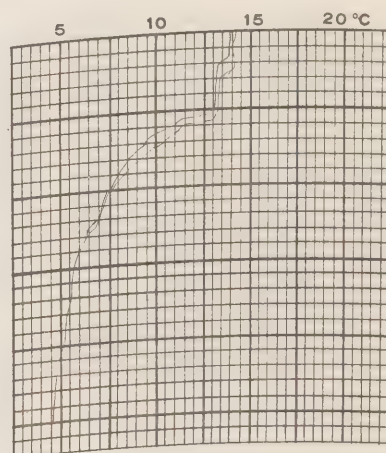
63-08-13-17.3
49° 50' n
144° 46' w



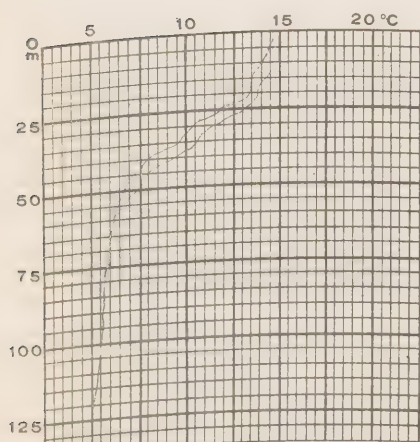
63-08-15-17.8
50° 00' n
145° 01' w



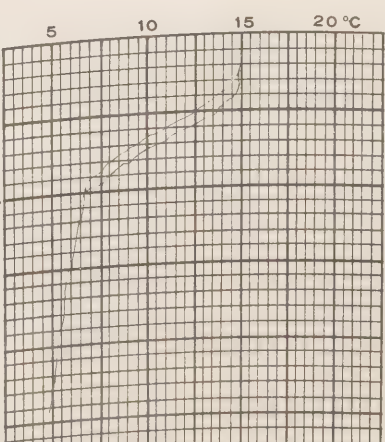
63-08-17-18.0
50° 00' n
145° 01' w



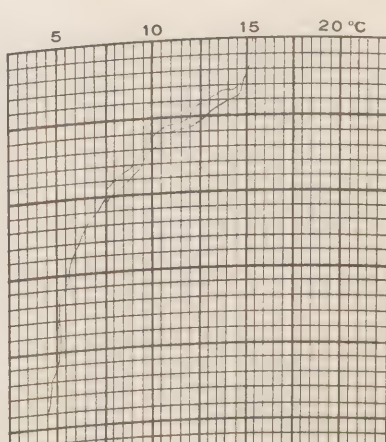
63-08-19-17.2
49° 59' n
144° 59' w



63-08-21-17.3
50° 01' n
144° 59' w

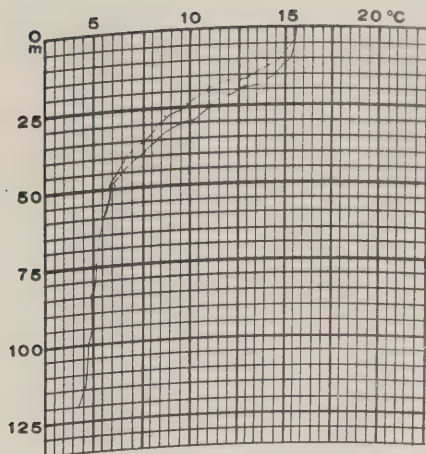


63-08-23-17.3
50° 08' n
145° 03' w

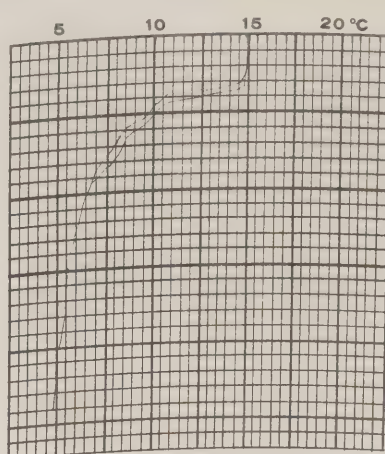


63-08-25-17.2
50° 01' n
145° 00' w

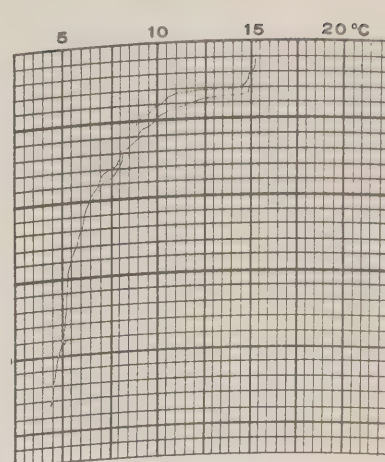
C.C.G.S. "Stonetown", Patrol No. 57, OCEAN Series



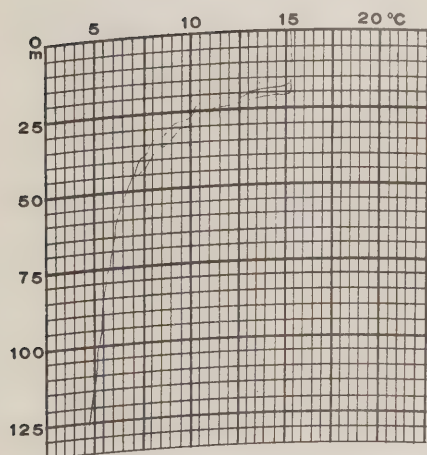
63-08-27-17.3
50° 03' n
144° 56' w



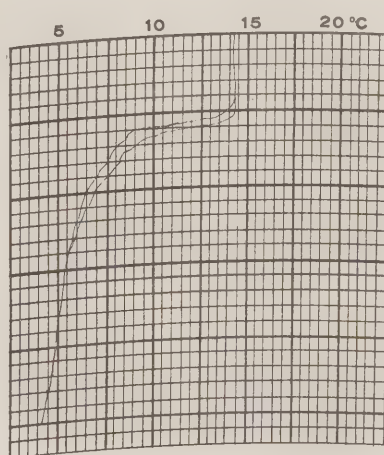
63-08-29-17.2
50° 07' n
145° 04' w



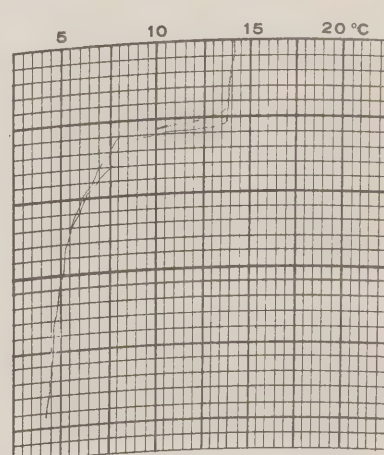
63-08-31-17.5
50° 01' n
145° 03' w



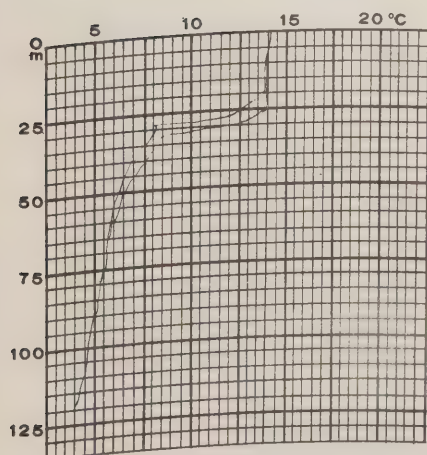
63-09-02-17.5
50° 02' n
144° 58' w



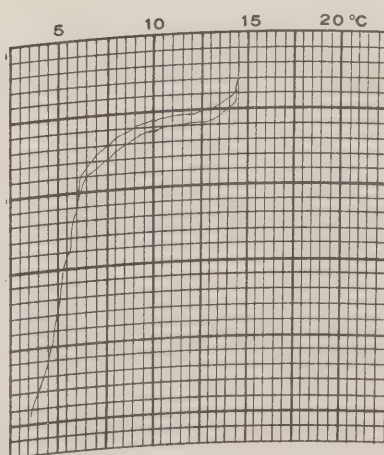
63-09-04-17.8
50° 00' n
145° 01' w



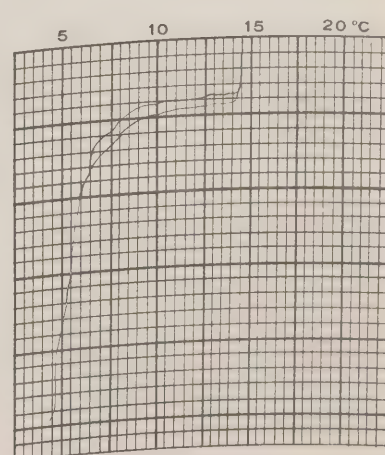
63-09-06-17.7
50° 06' n
144° 57' w



63-09-08-17.2
50° 01' n
145° 02' w

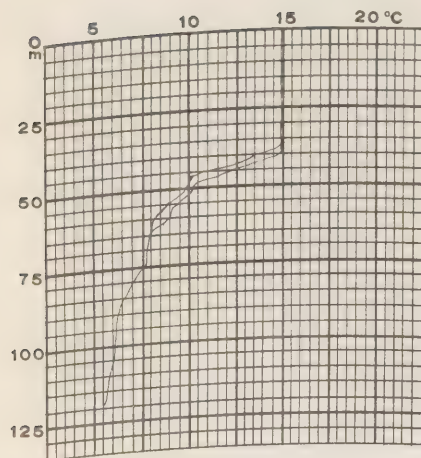


63-09-10-18.0
49° 58' n
145° 01' w

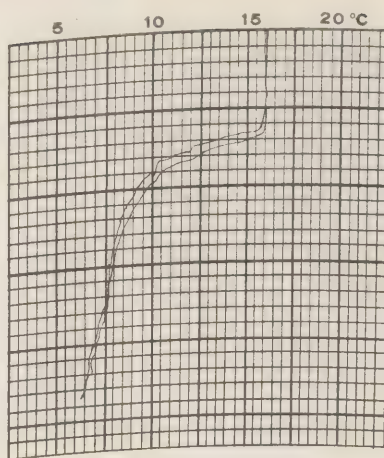


63-09-12-18.0
50° 00' n
145° 04' w

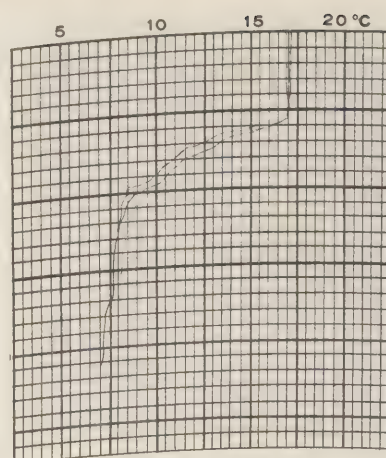
C.C.G.S. "Stonetown", Patrol No. 57, OCEAN Series



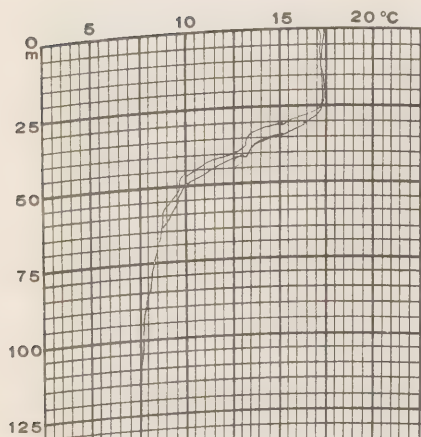
63-09-13-22.0
49° 52' n
140° 39' w



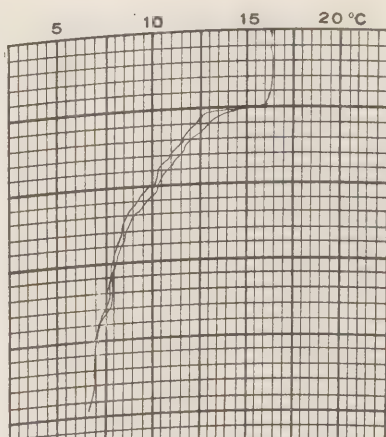
63-09-14-09.7
49° 30' n
136° 40' w



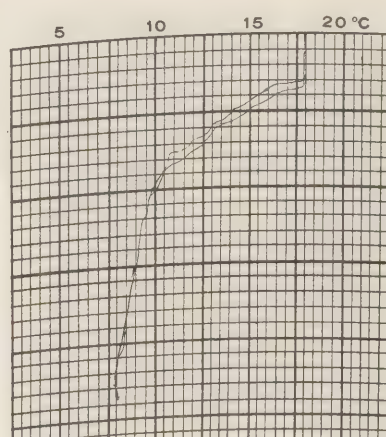
63-09-14-21.3
49° 13' n
132° 40' w



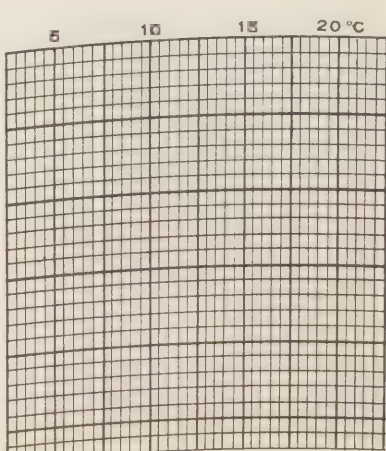
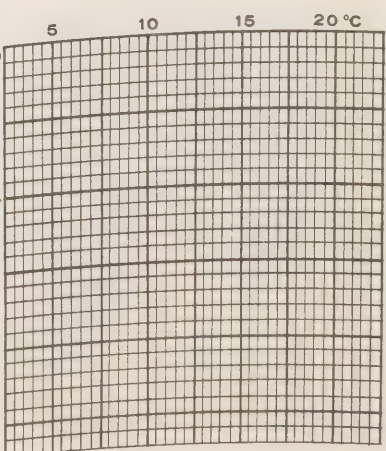
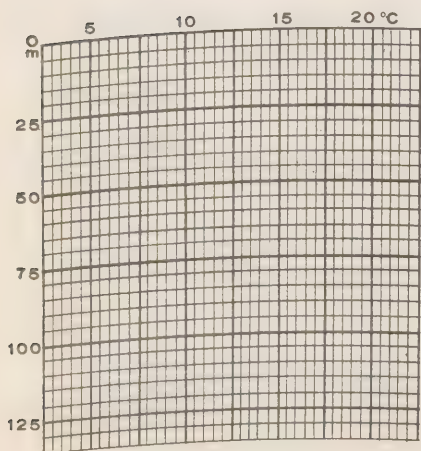
63-09-15-03.0
48° 58' n
130° 35' w



63-09-15-09.5
48° 43' n
128° 38' w



63-09-15-16.8
48° 40' n
126° 41' w



S E C T I O N V

Surface salinity data

Surface salinity observations, Ocean Weather Station "P";
generally observed at 0200 G.M.T., unless otherwise noted.

Date	Position	Salinity ‰
C.C.G.S. "St. Catharines", Survey P-63-3		
63-06-26-1745	48°56' n 129°40' w	31.882
27-0200	49°04' 131°40'	32.467
1800	49°23' 135°40'	32.401
28-0130	49°30' 137°40'	32.454
0945	49°37' 139°40'	32.448
1740	49°45' 141°40'	32.482
30-0200	50°00' 145°00'	32.570
07-02-0200	50°03' 145°01'	32.556
03	50°02' 145°02'	32.718
04	50°01' 145°04'	32.604
06	50°03' 145°05'	32.582
07	50°00' 145°00'	32.550
08	49°57' 145°00'	32.556
09	50°03' 145°03'	32.574
10	50°02' 145°02'	32.510
11	49°59' 145°03'	32.529
12	49°58' 145°02'	32.530
13	50°01' 145°02'	32.646
14	50°01' 145°02'	32.523
15	50°00' 145°02'	32.591
16	50°02' 145°01'	32.574
17	50°00' 145°08'	32.528
18	50°01' 144°57'	32.507
19	49°57' 144°57'	32.530
20	50°00' 145°00'	32.554
21	50°00' 145°00'	32.677
23	40°58' 144°57'	32.694
24	50°00' 145°00'	32.543
25	49°59' 144°55'	32.550
26	50°01' 144°58'	32.517
27	50°00' 145°00'	32.514
28	50°00' 145°00'	32.527
29	50°00' 145°00'	32.687
30	49°59' 144°58'	32.518
31	50°00' 145°02'	32.648
08-01	50°00' 144°59'	32.517
02	50°00' 144°56'	32.500
1515	49°51' 142°40'	32.432
1944	49°45' 141°40'	32.466
2320	49°41' 140°40'	32.450
03-0230	49°38' 139°40'	32.448
0602	49°37' 138°40'	32.417
0920	49°29' 137°40'	32.408
1315	49°26' 136°40'	32.331

Date	Position		Salinity ‰
C.C.G.S. "St. Catharines", Survey P-63-3			
63-08-03-1630	49°22'n	135°40'w	32.273
2325	49°15'	133°40'	32.444
04-0607	49°05'	131°40'	32.297
04-1454	48°50'	128°40'	31.977
04-2110	48°47'	127°40'	31.971

Survey P-63-3, Special Space-time Series

63-07-21-1820	49°59.6'n	145°00.0'w	32.516
1825	49°59.5'	144°59.4'	32.552
1830	49°59.9'	144°59.3'	32.535
1835	50°00.3'	144°59.5'	32.525
1840	50°00.5'	145°00.0'	32.532
1845	50°00.5'	145°00.7'	32.537
1850	50°00.2'	145°00.7'	32.555
1855	49°59.7'	145°00.7'	32.546
1900	49°59.2'	145°00.8'	32.546
1905	49°59.1'	145°00.1'	32.534
1910	49°59.0'	144°59.4'	32.518
1915	49°59.0'	144°58.6'	32.518
1920	49°59.5'	144°58.5'	32.518
1925	50°00.0'	144°54.4'	32.516
1930	50°00.5'	144°58.5'	32.524
1935	50°01.0'	144°58.5'	32.526
1940	50°01.0'	144°59.2'	32.529
1945	50°01.1'	144°59.9'	32.531
1950	50°01.0'	145°00.7'	32.522
1955	50°01.0'	145°01.5'	32.526
2000	50°00.6'	145°01.6'	32.526
2005	50°00.1'	145°01.6'	32.519
2010	49°59.7'	145°01.6'	32.524
2015	49°59.1'	145°01.6'	32.523
2020	49°58.5'	145°01.6'	32.520
2025	49°58.5'	145°00.8'	32.515
2030	49°58.5'	145°00.0'	32.537
2035	49°58.5'	144°59.2'	32.518
2040	49°58.5'	144°58.4'	32.526
2045	49°58.5'	144°57.7'	32.523
2050	49°59.0'	144°57.7'	32.520
2055	49°59.5'	144°57.5'	32.517
2100	49°59.9'	144°57.7'	32.523
2105	50°00.3'	144°57.5'	32.522
2110	50°00.9'	144°57.6'	32.525
2115	50°01.3'	144°57.8'	32.523
2235	50°01.5'	144°58.4'	32.560
2240	50°01.6'	144°59.2'	32.534
2245	50°01.6'	144°59.8'	32.536
2250	50°01.5'	145°00.3'	32.535
2255	50°01.5'	145°00.9'	32.530

Date	Position	Salinity ‰
Survey P-63-3, Special Space-time Series		
63-07-21- 2300	50°01.5'n 145°01.8'w	32.539
2305	50°01.0' 145°02.3'	32.524
2310	50°00.5' 145°02.2'	32.532
2315	50°00.1' 145°02.2'	32.537
2320	49°59.5' 145°02.2'	32.530
2325	49°59.0' 145°02.3'	32.524
2330	49°58.4' 145°02.1'	32.523
2335	49°58.0' 145°02.3'	32.516
2340	49°57.8' 145°01.5'	32.520
2345	49°57.8' 145°01.0'	32.509
2350	49°57.8' 145°00.2'	32.514
2355	49°57.9' 144°59.6'	32.518
63-07-22-0000	49°58.0' 144°58.8'	32.508
0005	49°57.9' 144°57.9'	32.504
0010	49°58.0' 144°56.8'	32.506
0015	49°58.4' 144°56.6'	32.512
0020	49°58.8' 144°56.6'	32.522
0030	50°00.0' 144°56.8'	32.523
0035	50°00.6' 144°57.0'	32.525
0040	50°01.0' 144°56.9'	32.508
0045	50°01.6' 144°57.0'	32.523
0050	50°02.0' 144°56.9'	32.516
0055	50°02.2' 144°57.4'	32.526
0100	50°02.3' 144°58.4'	32.512
0105	50°02.3' 144°59.1'	32.523
0110	50°02.1' 145°00.0'	32.521
0115	50°02.0' 145°00.5'	32.524
0120	50°02.0' 145°01.5'	32.526
0125	50°02.0' 145°02.5'	32.530
0135	50°01.6' 145°03.4'	32.528
0140	50°01.0' 145°03.3'	32.518

C.C.G.S. "Stonetown", Patrol No. 57

63-08-02-0200	49°49'n 144°21'w	32.405
03	49°50' 145°15'	32.559
04	49°56' 145°13'	32.556
05	49°56' 145°13'	32.525
06	50°01' 145°04'	32.469
07	50°00' 144°56'	32.503
08	50°10' 144°52'	32.503
09	50°03' 145°01'	32.524
10	50°00' 145°18'	32.534

Date	Position		Salinity ‰
C.C.G.S. "Stonetown", Patrol No. 57			
63-08-11-0200	49°47' n	145°04' w	32.542
12	49°56'	144°59'	32.541
13	49°59'	144°59'	32.525
14	49°55'	144°42'	32.529
15	50°02'	145°03'	32.516
16	50°06'	145°15'	32.596
17	50°00'	145°01'	32.534
18	50°04'	144°51'	32.542
19	50°05'	144°52'	32.519
20	49°59'	144°57'	32.540
21	50°04'	144°53'	32.539
22	50°03'	144°58'	32.541
23	49°57'	145°04'	32.524
24	50°10'	145°09'	32.536
25	50°00'	145°00'	32.526
26	50°04'	145°06'	32.515
27	50°06'	145°10'	32.542
28	50°07'	145°00'	32.533
29	49°55'	144°52'	31.933
30	50°08'	145°04'	32.405
31	50°05'	145°05'	32.398
09-01	50°05'	144°58'	32.439
02	50°01'	145°02'	32.342
04	50°02'	145°03'	32.425
05	49°58'	145°04'	32.435
06	50°09'	144°51'	32.387
07	50°01'	144°59'	32.410
08	50°04'	145°00'	32.430
09	50°05'	145°04'	32.457
10	49°56'	145°02'	32.418
11	50°01'	144°58'	32.419
12	50°00'	145°06'	32.430

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